



Conversion Guideline

Opel Movano [X62]

Part 4 - Chapter 101-151



Edition: November 2012

GME Engineering
Special Vehicle Development / Light Commercial Vehicles
Rüsselsheim / Germany

Conversion Guideline - Part 4

CHAPTER	DESCRIPTION:	PAGE
101	POSITION OF ELECTRICAL GROUNDS	4
102	BATTERY LOCATION	9
103	ELECTRICAL CURRENTS AVAILABLE	10
104	* 6 PIN CONNECTOR FOR CONVERSIONS, "KPD" OPTION	12
105	* CAN BUS INTERFACE MODULE, "KC6" OPTION	18
106	CELL WIRING CONNECTION	27
107	ELECTRICAL CONNECTIONS	33
109	+12 V CURRENT DISTRIBUTION	35
110	ENGINE RUNNING INFORMATION	37
111	ACCELERATED IDLE, "UF3" OPTION	38
112	PARKING BRAKE INFORMATION	39
113	POSITION OF WIRING INSTALLATION	41
114	ABS WIRING INSTALLATION	43
115	INSTALLATION OF ELECTRICAL COMPONENTS	44
117	ENGINE INTERCONNECTIONS UNIT	45
118	* PASSENGER COMPARTMENT FUSE-RELAY BOX	48
120	MULTIPLEXED CAN NETWORK	50
122	LIGHTS AND SIGNALLING LIGHT INFORMATION	51
123	DAYTIME RUNNING LIGHTS	57
124	* SWITCH INSTALLATION	58
125	16-WATT SIDE INDICATORS, "UZB" OPTION	59
126	INSTALLATION OF AN ADDITIONAL BATTERY	60
127	DRIVER'S AUDIBLE SEAT BELT WARNING	63
128	EXTENDED REAR WIRING, "UNF" OPTION	65
129	MODIFIABLE ECU SETTINGS	66
131	INTERIOR LIGHTING	69
132	ELECTRIC PLUG FOR TRAILERHITCH	74

* = This chapter is new or was modified after the last edition of November 2011.

Conversion Guideline - Part 4

CHAPTER	DESCRIPTION:	PAGE
133	* RECONSTRUCTING OPENING PANEL FUNCTIONS	77
135	REMOTE ENGINE START AND STOP	87
137	DEACTIVATION OF AIRBAGS AND SEAT BELT PRETENSIONERS	89
139	CONNECTION TO THE NEGATIVE BATTERY TERMINAL	90
140	CONNECTION TO THE POSITIVE BATTERY TERMINAL	92
141	ROUTING AIRBAG AND PRE-TENSIONER WIRING	96
149	* WIRING PRE-FIT FOR TRABUS	98
150	* ADDITIONAL LOCK WITH 3-BUTTON KEY	108
151	* STOP & START	111

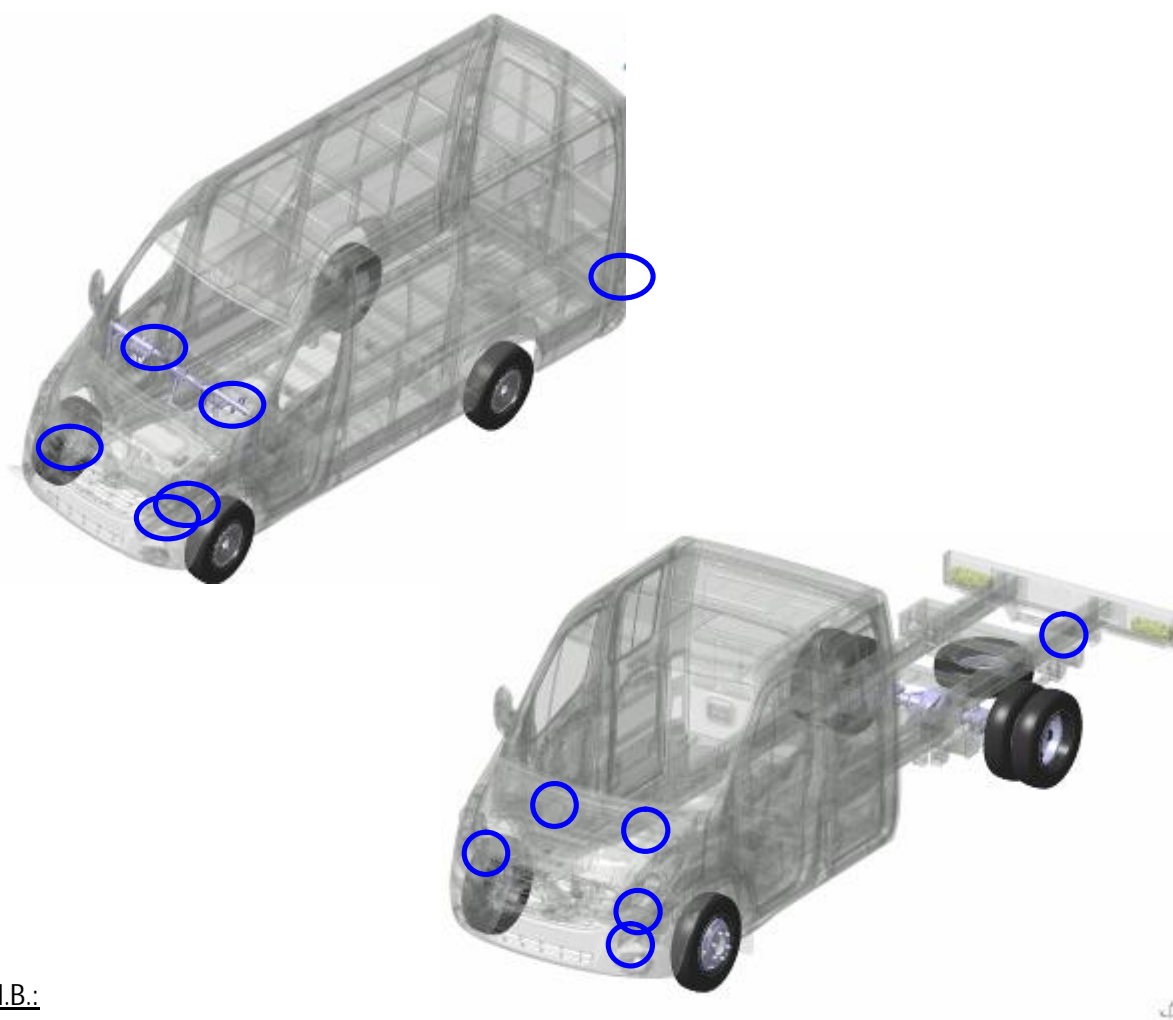
* = This chapter is new or was modified after the last edition of November 2011.

The vehicle has several electrical and electronic grounds.

Before working on the vehicle, refer to chapter 107 "Electrical Connections". The electricity sheets of the General Technical Conversion Guide must also be consulted before any modifications are made to the vehicle.

An electrical ground, on a welded stud, is recommended for each additional piece of electrical equipment. The tightening torque for the grounding nuts on the M6 studs is $8 \text{ Nm} \pm 15\%$ (use of a calibrated torque wrench is recommended).

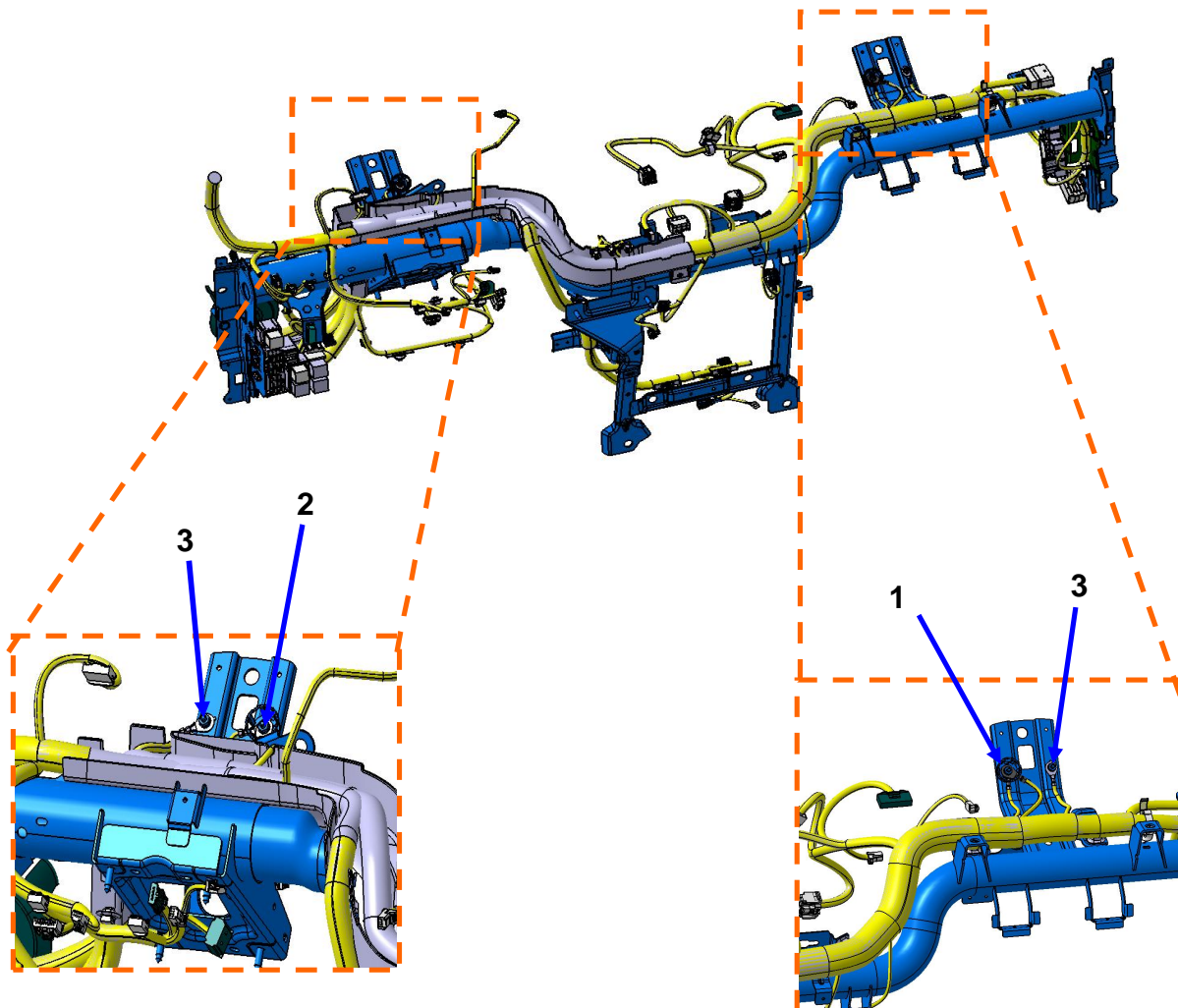
LOCATION OF THE ELECTRICAL GROUNDS



N.B.:

Electronic grounds may not be used.

ELECTRICAL GROUNDS ON DASHBOARD CROSS MEMBER



- 1: Ground MAM-32
- 2: Ground MAN-32
- 3: Do not use

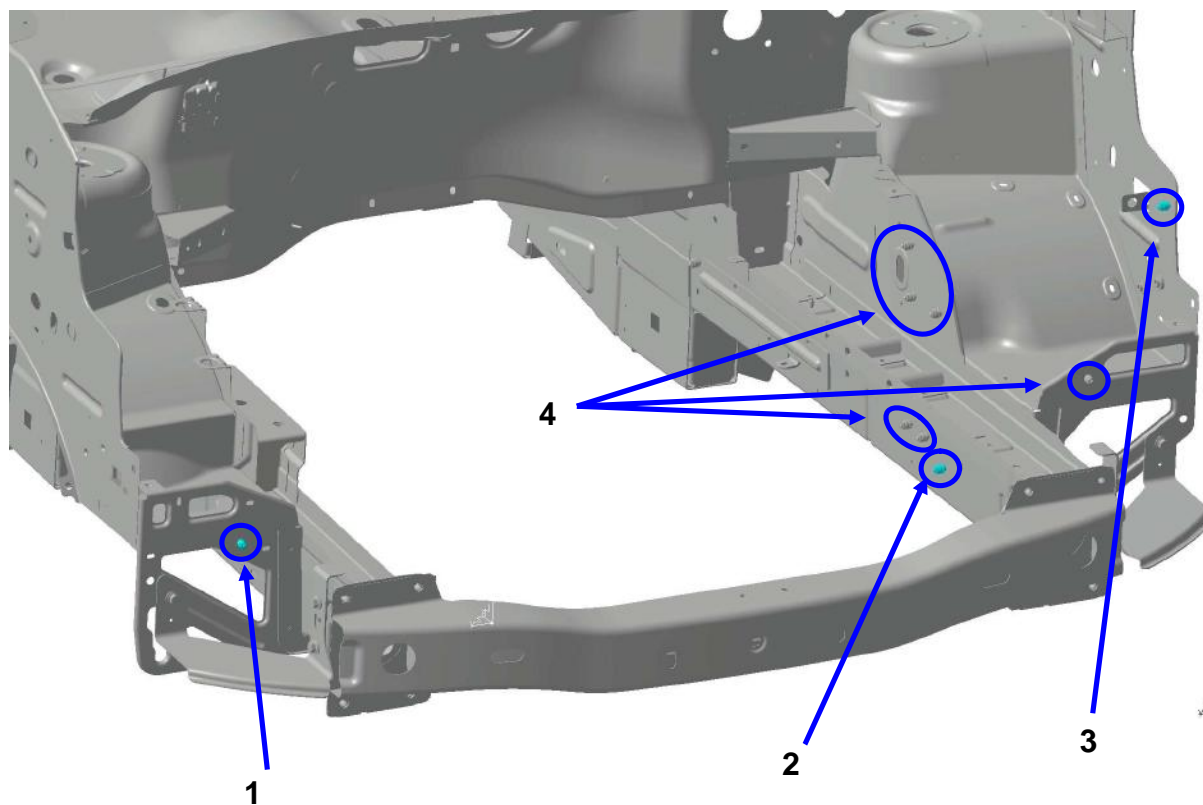


VAUXHALL



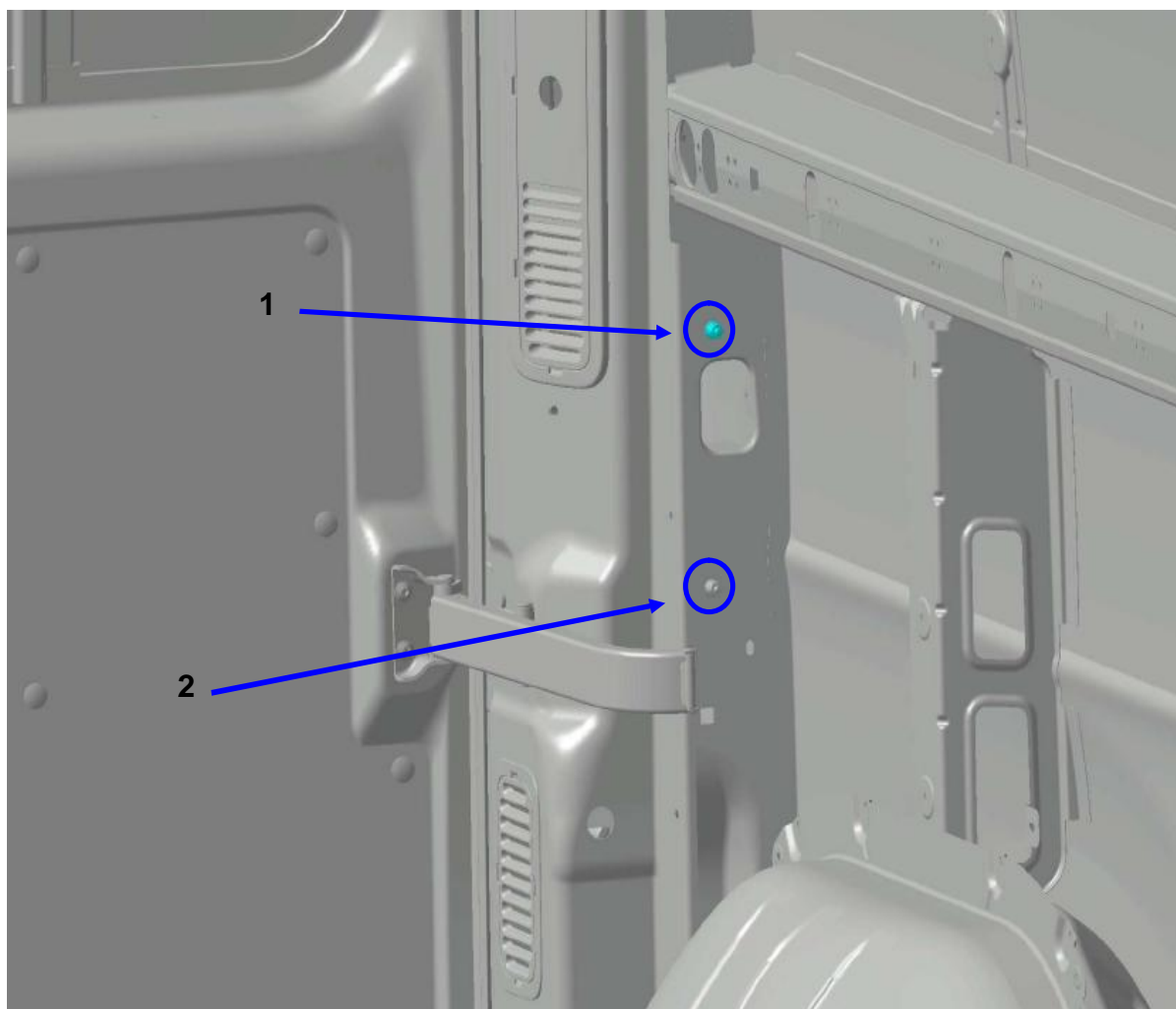
Wir leben Autos.

ELECTRICAL GROUNDS IN THE ENGINE COMPARTMENT



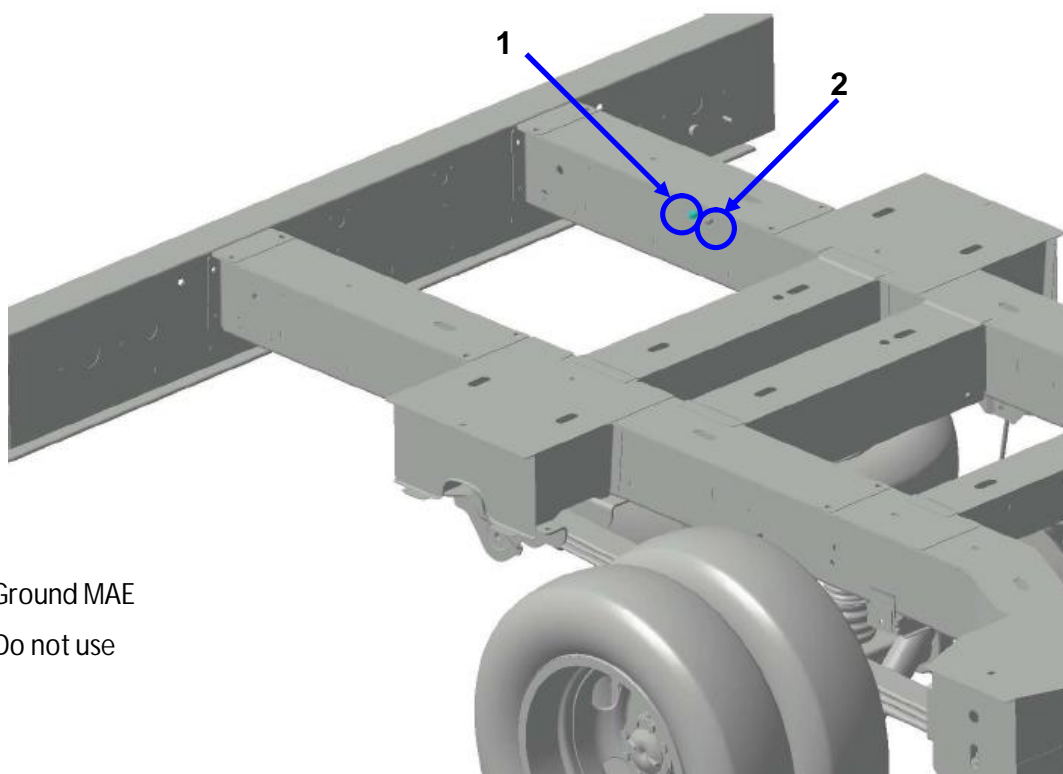
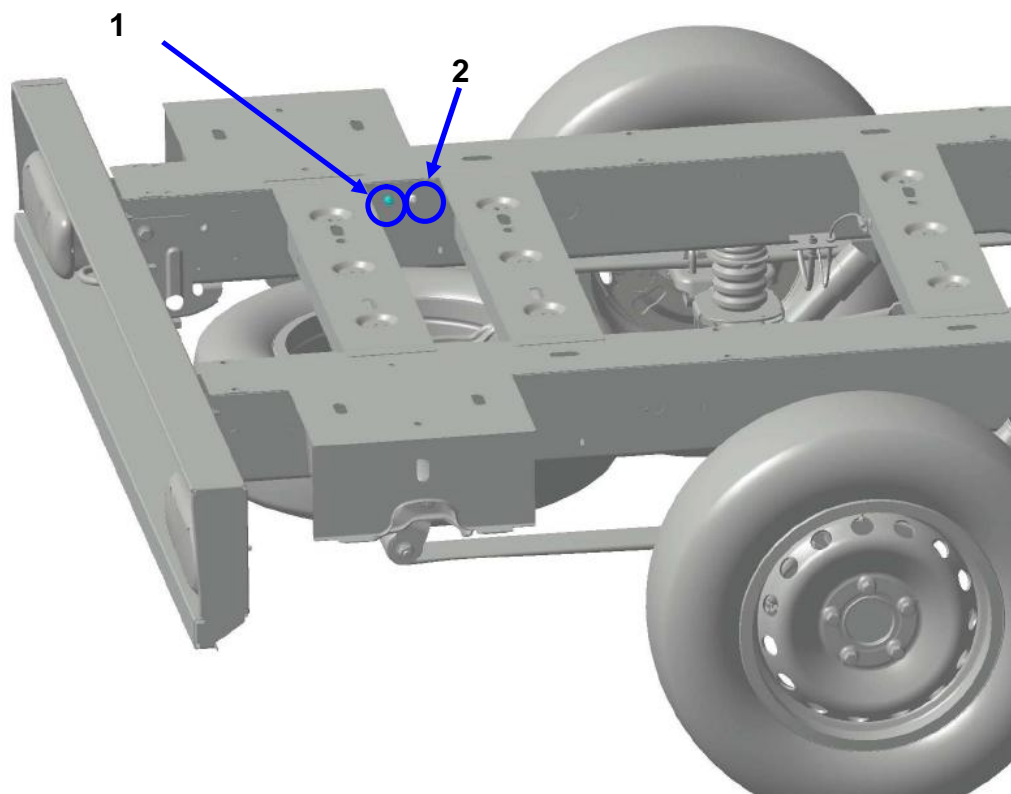
- 1: Ground MW-32
- 2: Ground MAJ-12
- 3: Ground MAS-32
- 4: Do not use

ELECTRICAL GROUNDS ON THE PANEL VAN EXTREME REAR PILLAR



- 1: Ground MGA-7
- 2: Do not use

ELECTRICAL GROUNDS ON THE CHASSIS



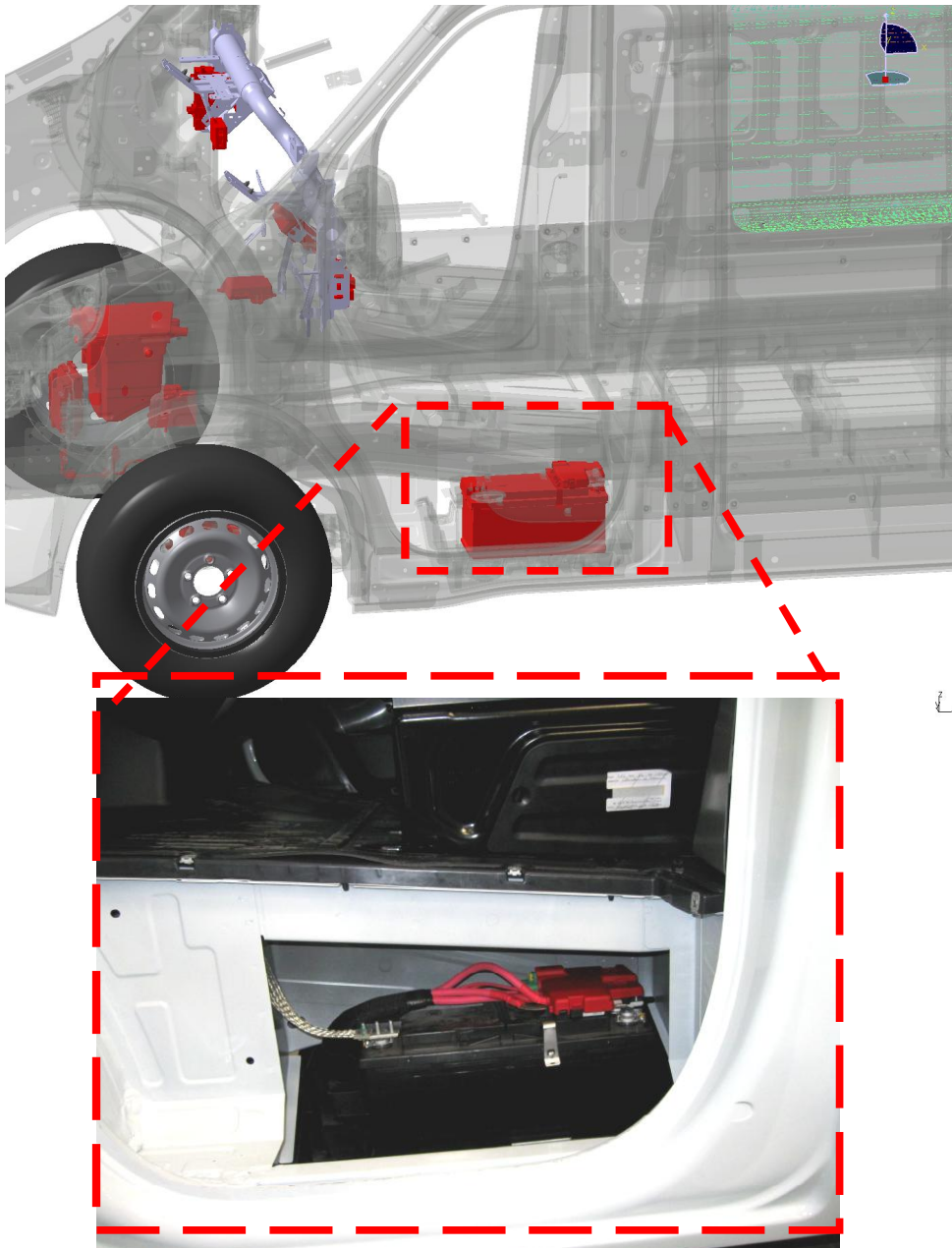
1: Ground MAE

2: Do not use

The battery is located in the left-hand side door sill. To get to the battery, the plastic door sill trim needs to be removed.

The battery is an L6 110 Ah battery.

BATTERY LOCATION



To connect anything to the battery, please refer to the “Connection to the positive battery terminal” and “Connection to the negative battery terminal” sheets.

The tables below show the different electrical currents available (in amps) depending on engine type and options.

The vehicles come with a 110 Ah battery and a 180 A alternator.

Warning:

The value given is the worst-case-scenario average value available when the engine is running.

The electrical equipment added is given priority over the vehicle's basic additional electric heating (thermoplunger) and may thus jeopardise the vehicle's comfort level.

Note:

Any electrical equipment added must be fused. These fuses must have a value appropriate to the equipment's consumption and the cross section of the wiring.

For the electrical assessment calculation method, please refer to the "Energy Management" sheet.

To find out how the accelerated idle works, please refer to the "Accelerated idle" sheet.

CURRENTS AVAILABLE FOR FRONT WHEEL DRIVE VERSIONS

Engine	Version		Without accelerated idle	With accelerated idle (rpm)				
				900	1000	1100	1200	1300
M9T (74 kW)	Base	DRL *	32	46	58	63	68	72
		Without DRL *	44	59	71	76	80	85
	CA	DRL *	29	43	55	60	65	70
		Without DRL *	42	56	68	73	78	82
M9T (92 kW)	Base	DRL *	32	46	58	63	68	72
		Without DRL *	44	59	71	76	80	85
	CA	DRL *	29	43	55	60	65	70
		Without DRL *	42	56	68	73	78	82
M9T (107 kW)	Base	DRL *	42	56	68	73	78	83
		Without DRL *	55	69	81	86	91	96
	CA	DRL *	9	24	36	40	45	50
		Without DRL *	22	36	48	53	58	63

DRL: Day Running Lights (Automatic operation of lights)

CA: Air conditioning



VAUXHALL



Wir leben Autos.

CURRENTS AVAILABLE FOR REAR WHEEL DRIVE VERSIONS

Engine	Version		Without accelerated idle	With accelerated idle (rpm)				
				900	1000	1100	1200	1300
M9T (74 kW)	Base	DRL *	60	74	86	91	96	100
		Without DRL *	72	87	99	104	108	113
	CA	DRL *	60	74	86	91	96	100
		Without DRL *	72	87	99	104	108	113
M9T (92 kW)	Base	DRL *	60	74	86	91	96	100
		Without DRL *	72	87	99	104	108	113
	CA	DRL *	60	74	86	91	96	100
		Without DRL *	72	87	99	104	108	113
M9T (107 kW)	Base	DRL *	60	74	86	91	96	100
		Without DRL *	72	87	99	104	108	113
	CA	DRL *	39	54	66	71	75	80
		Without DRL *	52	67	79	83	88	93

DRL: Day Running Lights (Automatic operation of lights)

CA: Air conditioning

This option is used to provide various electrical supply circuits including “engine running” information required for any added component using electrical power.

This Option contains:

One 6-way standby connector in the dashboard area and another in the right-side B pillar permitting the following access:

- Information “engine running”
- Activation of accelerated idle
- Power supply + 12V offloaded current distribution

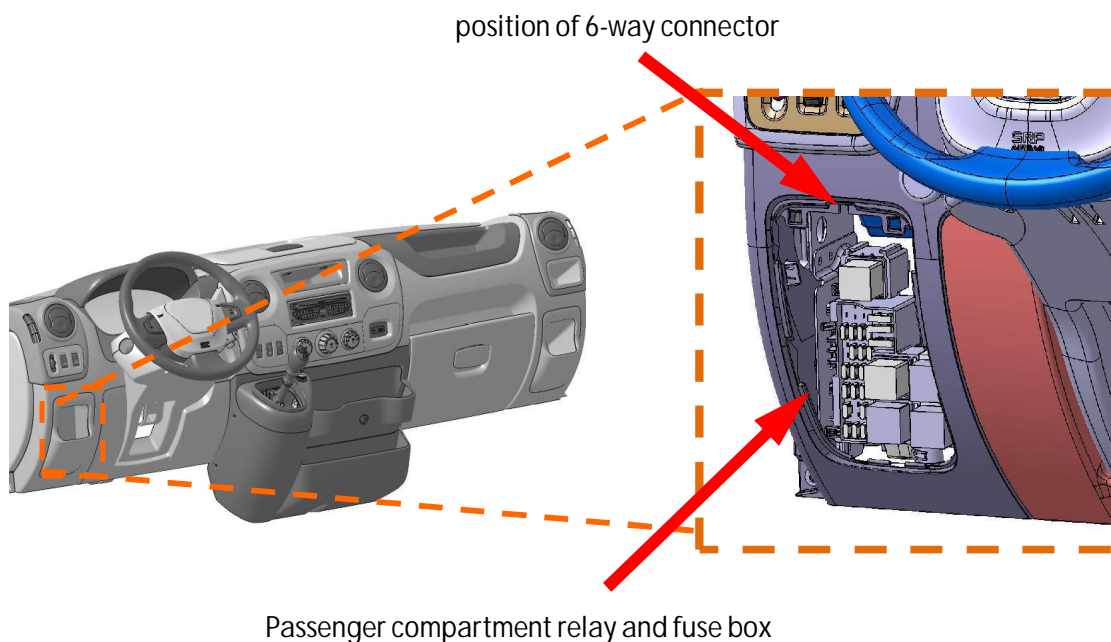
One 2-way standby connector in the right-hand B pillar permitting the following access:

- Power supply + 12V with max. intensity of 40A.

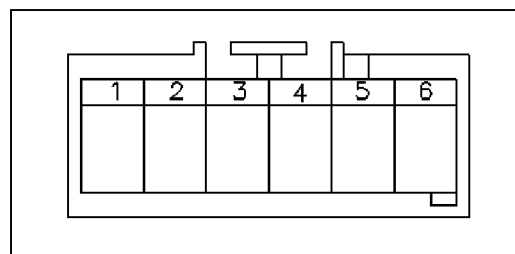
1. Dashboard area connector

The 6-way connector is located on the left-hand side near to the panel feed-through ring, the passenger compartment fuse and relay box and the bonnet opening lever. The connector is in the same position for both left-hand and right-hand drive vehicles.

It is secured on the dashboard wiring using a link. An excess length is provided for the connection.



ASSIGNMENT OF 6 WAY-CONNECTOR



Way number	Assignment	
Way 1 (3ADJ)	Accelerated idle control (wire cross section 0.5 mm²)	
Way 2 (BMT1)	“Engine running” information	Shared 10 A fuse (wire cross section 1 mm²)
Way 3 (SBP4)	Power supply + 12 V offloaded current distribution	
Way 4 (MAN32)	Ground (wire cross section 1.5 mm² large enough to adapt to the +12V offloaded current distribution)	
Way 5	Reserve	
Way 6	Reserve	

The counterpart to this connector is available from the Opel dealer network.

CONNECTION KIT



N.B.:

The permanent accumulated currents of the following 2 ways must not exceed 8 A:

- Way 2: "Running Engine" information
- Way 3: "+ 12 V current distribution". (activated from the +ACC (+ accessory) position, 1st notch on the ignition key).

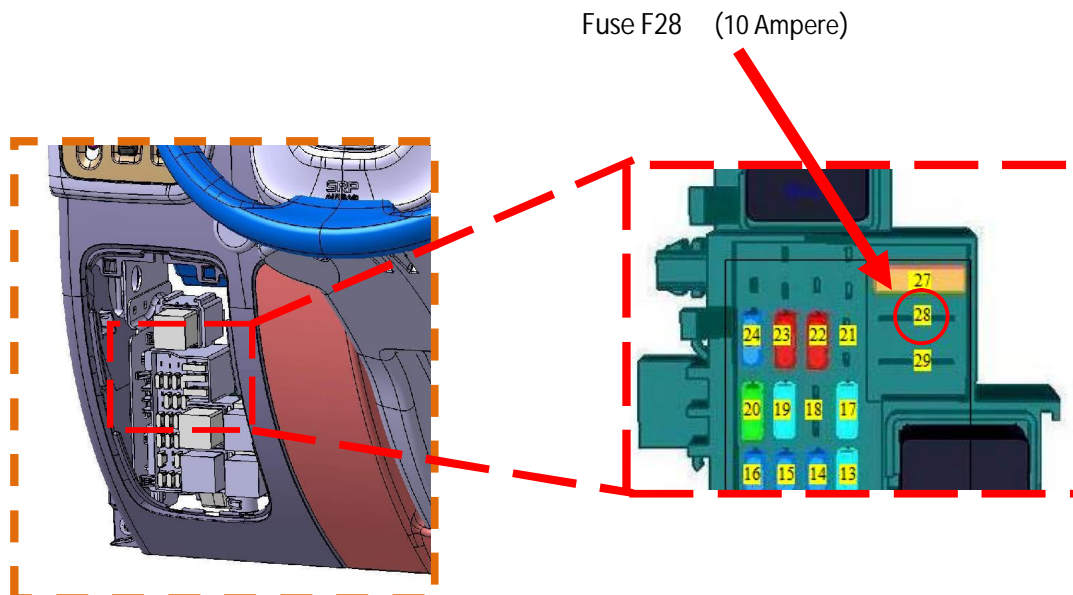
These ways are protected by 10 A fuse F28 in the passenger compartment fuse and relay box (BFRH).

For more power, ways 2 and 3 need to be relayed.

When the engine is off, the energy management system can offload these functions to save enough battery power to start the vehicle.

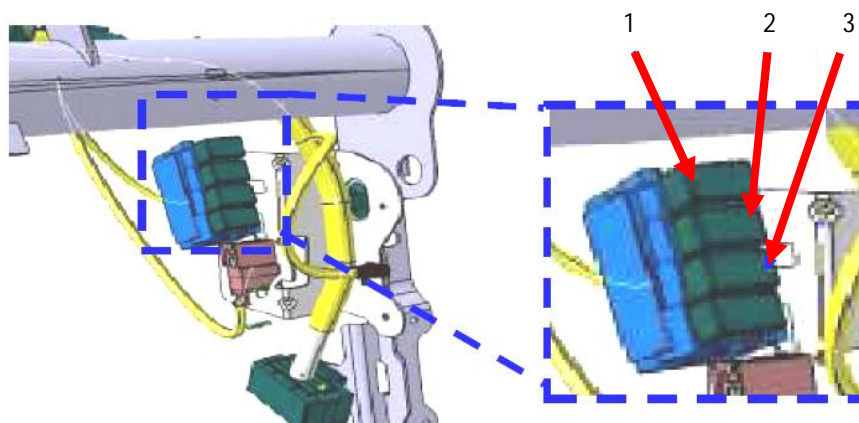
Fuse position for 6-way connector

Power fuse F28 is located in the passenger compartment relay/fuse box (see chapter 118).



Relay position for the Option KPD

The relay box for the KPD option is located in the right-hand side of the dashboard.



- 1: 20 A Relais + 12 V load shed current distribution power supply
- 2: 20 A Relais Engine running information
- 3: 20 A Relais Heated seat

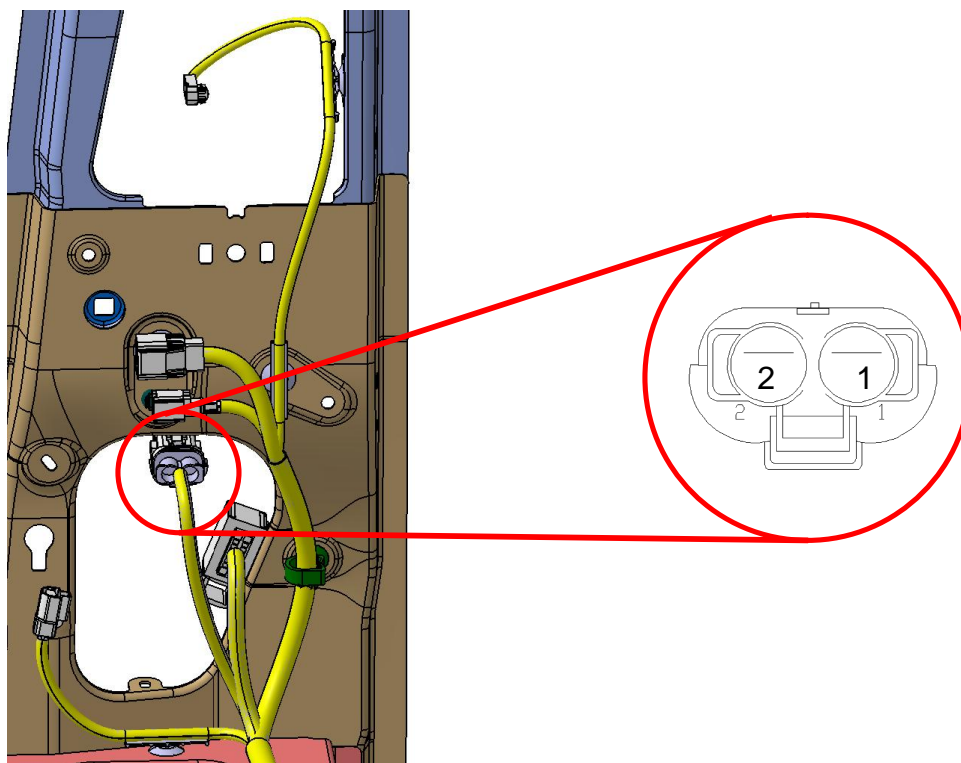
2. The 2 way-connector in the B pillar

The connector is located in the right-hand B pillar behind the plastic trim. This connector is identical to that which is described in Chapter 106th for the 'WRF' option. There also the access to the connectors on the B-pillar is described.

The maximum permanent current of this power supply must not exceed 40 A. This line is protected by 50A fuse F6 in the engine compartment interconnections unit.

Important:

This power supply is connected directly to the battery. The vehicle is therefore not protected by the energy management system. Risk of battery draining.



Way number	Assignment
Way 1 (BP23)	+12 V direct battery power supply for maximum consumption of 40 A (wire cross section 7 mm ²). 50 A fuse protection.
Way 2 (MAN32)	Ground (wire cross section 7 mm ² large enough to adapt to the current of the +12V battery).

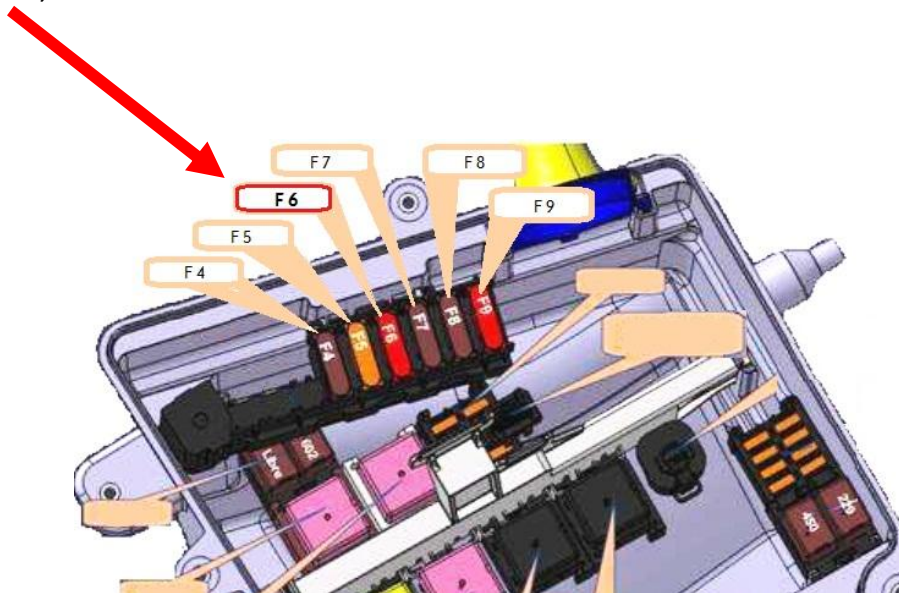
The counterpart to this connector is already fitted to the wiring but it is still necessary to obtain the contacts for this connector.

Connector	Wire cross section	Supplier reference	Supplier
0-1544334-3	3 to 6 mm ²	P790861	TYCO
	7 to 10 mm ²	P790862	TYCO

Location of the 2-way connector fuse

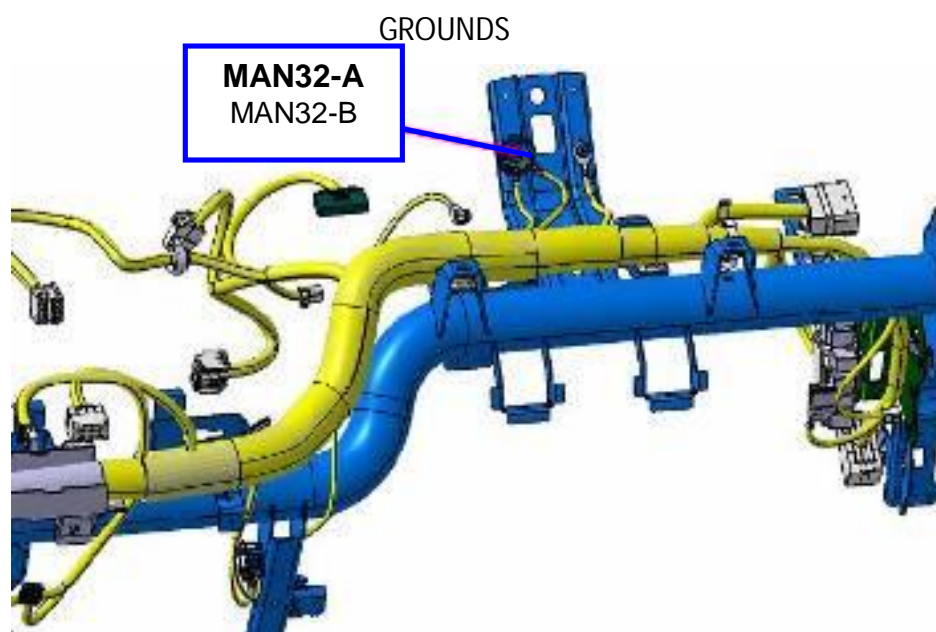
For further information see sheet 117-Engine Compartment Interconnections Unit.

Fuse F6 (50A)



Location of grounds associated with the “KPD” option

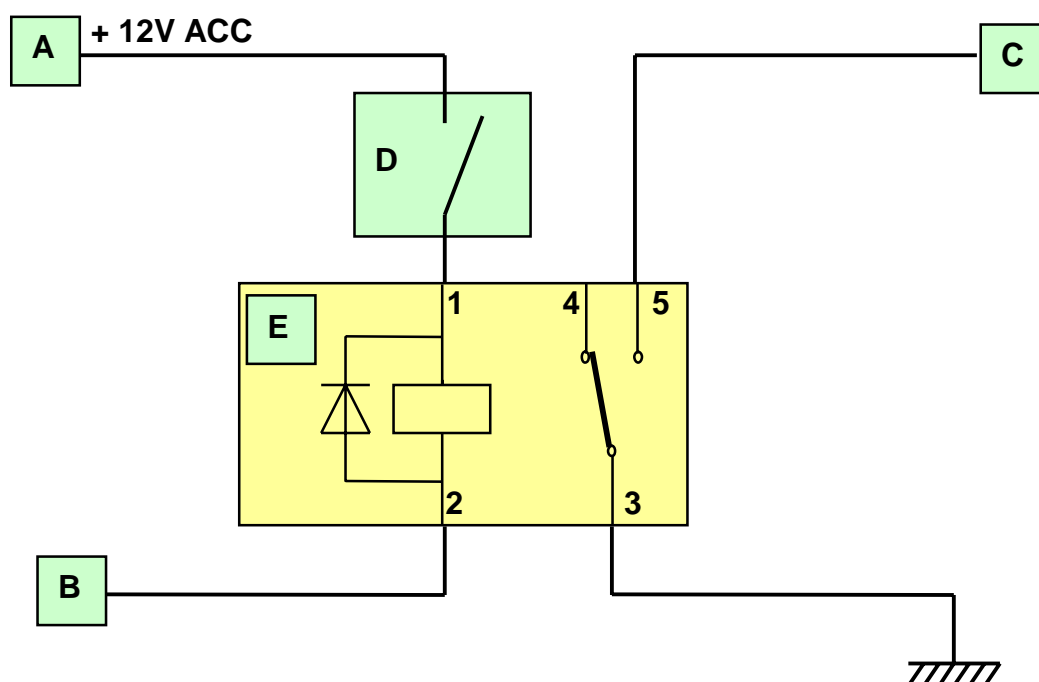
The grounds (MAN32-A and MAN32-B) for the 6-way and 2-way connectors are grouped together on a single stud on the right-hand support of the dashboard cross member.



3. Activation of the accelerated idle

To activate the accelerated idle speed, way 1 of the 6-way connector must be grounded.

EXAMPLE OF CONNECTION (ACCESSORY CONTROL)



- A: +12 V accessory relay power supply
- B: Accessory control of the accelerated idle
- C: Way 1 of the 6-way connector
- D: Switch
- E: Relay with a freewheel diode

N.B.:

The following 20 A relay can be used: (Cartier supplier reference: 29 201 041)

It is an option for Converters.

There is a need for this option mainly on following conversions: Camping-cars, emergency cars, integrated equipments as workshop vans or (nacelle) cranes/aerial platforms, refrigerated or vending vans.

The electronic box transforms the CAN information into many signals useful for equipments which needs this information to work in relation with the car status.

The adaptation Box for Conversion is the only possibility for Converters to use the CAN information properly without interfering with the CAN system. The information read are, for example, vehicle speed, engine status, door status, instant fuel consumption, engine speed, warning signal activation, turn signal activation, etc..

The interface module is available as an option on all versions. This module can be used to recover certain information that is available on the multiplexed network.

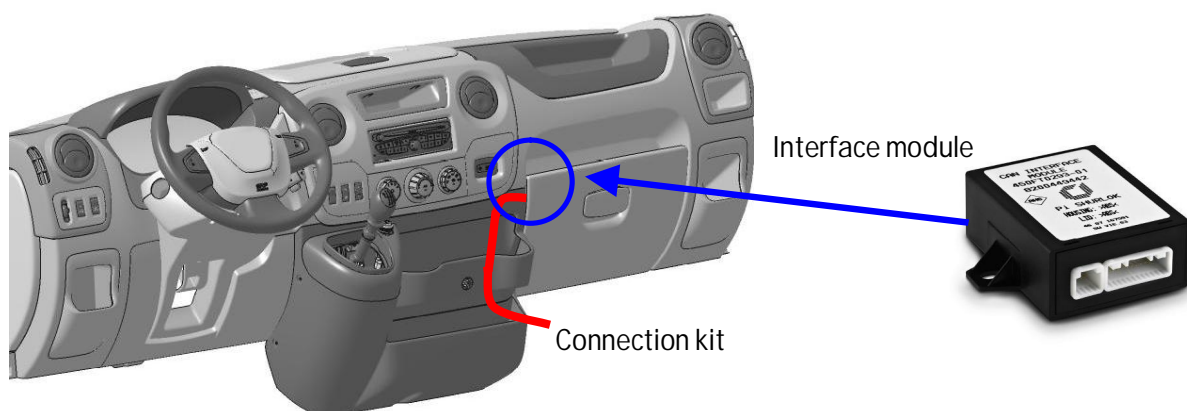
Attention

Before working on the vehicle, refer to chapter 107 "Electrical Connections".

As all consumers are networked and internally monitored, no modifications should be made to the CAN bus (e.g. breaking, extending or tapping). Any modifications to the length, cross-section or resistance of the wiring harness can lead to failure of safety-relevant components or to impaired comfort.

Tampering with and unauthorised installations can cause damage to the vehicle and invalidate the general operating permit.

UNIT LOCATION



The module is attached on the right-hand side of the central dashboard console for both left- and right-hand drive vehicles.

To recover the information from the interface module, the connection kit (part number 95514469) needs to be obtained (harness length: 600 mm).

CONNECTION KIT



For left-hand drive, the connection requires the storage box to be removed.

N.B.:

To make sure that each wire in the connection kit is correctly assigned, it is advisable to check the electrical continuity of the wiring before connection.

The unused wires should be insulated separately using a heat-shrinkable sleeve.

General remarks:

The "KC6" (Complementary Adaptations Unit) allows use of the vehicle's electrical information to give correct functioning of conversion, without interfering with the CAN network and preserving the electrical network.

The unit transmits the various types of information, as follows:

- 13 pieces of coded information in CAN format (BUS CAN2) Copying of 13 pieces of CAN vehicle information
- 8 pieces of binary information
- 2 pieces of analogue information

Attention:



If the vehicle is equipped with a digital tachograph, then pin 12 and pin 24 is not available at the 24-Pin connector (of the CAN-BUS Interfacemodul). All others information are still available.

Information available on the unit:

Information on the BUS CAN2:

- Engine speed
- Driver decision
- Position of brakes
- Water temperature
- Engine turning
- Position of clutch
- Vehicle speed
- Left and right indicators
- Hazard lights
- Position of the ignition key
- Door information (state of openings)
- Central locking
- Fuel consumption

Binary information:

- Position of brakes
- Engine turning
- Position of clutch
- Left and right indicators
- Hazard lights
- Position of the Ignition key
- Door information
- Central locking

Analogue information:

- Vehicle and engine speed



VAUXHALL

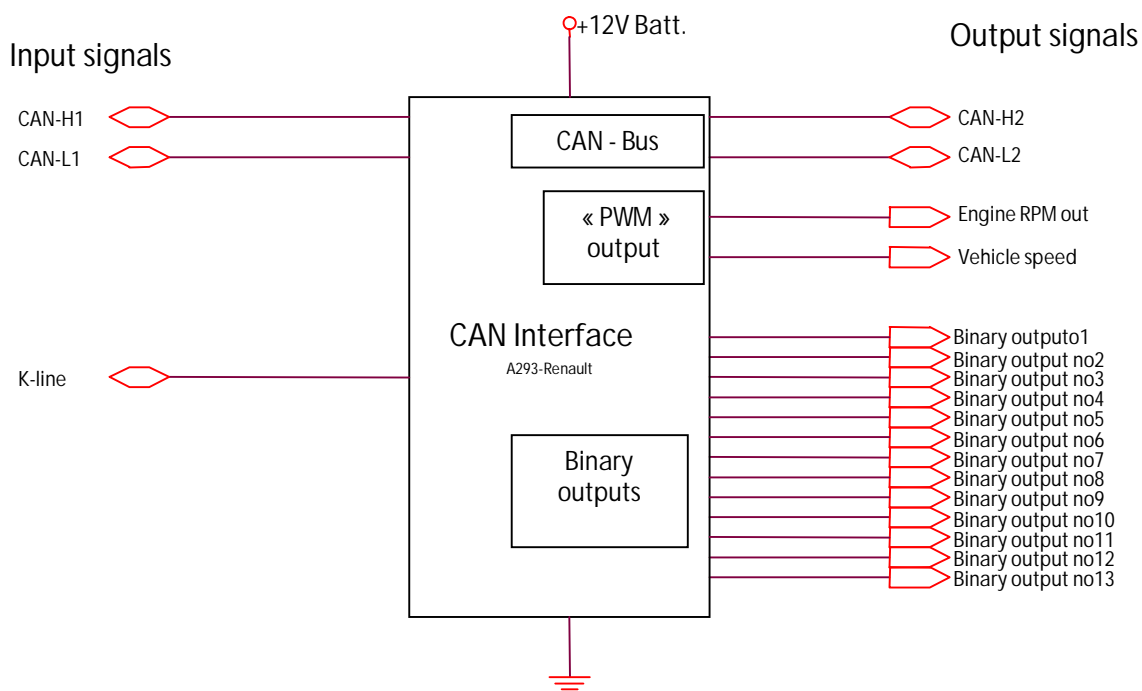


Wir leben Autos.

Description of unit input and output

From these fields present at the entry to the CAN1, the unit can deliver 3 types of output data.

- 1) on the Bus CAN2 via 2 Fields: ADAP base 1 and ADAP base 2.
- 2) 8 binary outputs for relay controls
- 3) 2 PWM outputs (compatible with instrument panel): engine speed and vehicle speed



1) CAN2 - bus

ADAP field base 1

The CAN BUS Interface takes care of the velocity information of the vehicle's CAN, which means:

- 500 kbds/s for Movano (X62)
- 250 kbds/s for Vivaro (X83)

The ID of the CAN BUS Raster are:

CAN Output frame information				
No	Frame Name	Frame ID (Hex)	Period in ms	Frame byte size
1	ADAP_Base1	0E7	40	7
1	ADAP_Base2	0E8	40	2

Name of Field: ADAP Base 1				
Name	Size (bits)	MSB position	LSB position	Resulting output data bits
Engine RPM	16	Byte no. 1 – Bit no. 7	Byte no. 2 – Bit no. 0	Exact duplicate of input bits
Driver request	8	Byte no. 3 – Bit no. 7	Byte no. 3 – Bit no. 0	Exact duplicate of input bits
Engine coolant Temp	8	Byte no. 4 – Bit no. 7	Byte no. 4 – Bit no. 0	Exact duplicate of input bits
Fuel consumption	8	Byte no. 5 – Bit no. 7	Byte no. 5 – Bit no. 0	Exact duplicate of input bits
Vehicle speed	16	Byte no. 6 – Bit no. 7	Byte no. 7 – Bit no. 0	Exact duplicate of input bits

ADAP field base 2

Name of Field: ADAP Base 2				
Description	Size (bits)	MSB position	State of input data	Resulting output data bits
Engine Status	1	Byte no. 1 – Bit no. 7	00 Engine stopped	0
			01 Engine stopped	0
			10 Running engine	1
			11 Engine stopped	0
Brake Switch Engine Control	1	Byte no. 1 – Bit no. 6	00 Brake not activated	0
			01 Brake activated	1
			10 Reserved	Leave output data in present state
			11 Invalid	Leave output data in present state
AC Compressor Authorized	1	Byte no. 1 – Bit no. 5		Exact duplicate of input bit
Clutch Switch	1	Byte no. 1 – Bit no. 4	00 Clutch not pressed (clutch let in)	0
			01 Clutch pressed	1
			10 Reserved	Leave output data in present state
			11 Invalid	Leave output data in present state
Door Switches	1	Byte no. 1 – Bit no. 3	All 5 input bits = 0	0
			Anyone of 5 input bits = 1	1
Ignition Switch	1	Byte no. 1 – Bit no. 2		Duplicate MSB of two input bits
Doors Locked	1	Octet N°1 – Bit N° 1		Exact duplicate of input bit

Name of Field: ADAP Base 2				
Description	Size (bits)	MSB position	State of input data	Resulting output data bits
Flashing Indicators (right/ left)	1	Byte no. 1 – Bit no. 0	00 Flashing indicators and hazard lights OFF	0
			01 Flashing indicator ON and hazard lights OFF	1
			10 Flashing indicator ON and hazard lights OFF	1
			11 Hazard lights ON and flashing indicator OFF	0
Hazard Light	1	Byte no. 2 – Bit no. 7	00 Flashing indicators and hazard lights OFF	0
			01 Flashing indicator ON and hazard lights OFF	0
			10 Flashing indicator ON and hazard lights OFF	0
			11 Hazard lights ON and flashing indicator OFF	1
****fixed to zero****	7	Byte no. 1 – Bit no. 6	LSB Octet N°2 - Bit N° 0	**** fixed to zero ****

2) Binary outputs (for relay controls)

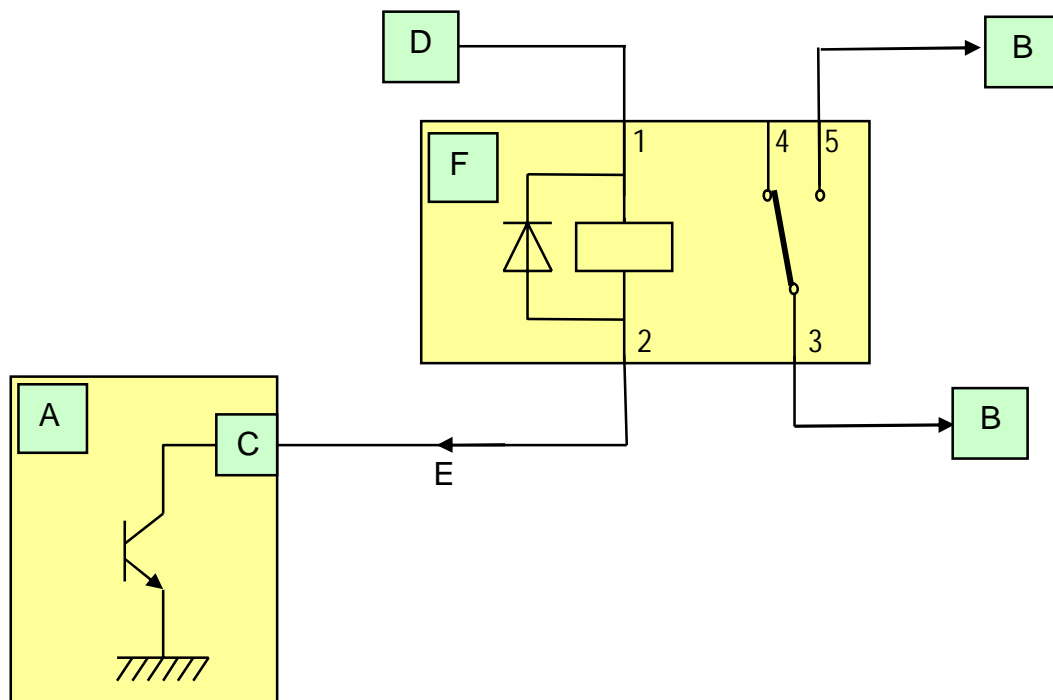
These 8 outputs comply with specification 36-00-100 UNI-B (45 mA, 10.5 at 16V)

CONFIGURATION OF OUTPUT DATA

Binary Output
Brake switch - engine control
Engine status
Clutch switch
Flashing indicators
Hazard lights
Ignition switch
Door switches
Doors locked

N.B. The max. current in unit output = 200mA

GENERIC DIAGRAM OF RELAY CONTROL BY BINARY OUTPUT



- A: Complementary Adaptations Unit
- B: Dry contact output for information recovery
- C: Binary output to be relayed on the Complementary Adaptations Unit.
- D: The relay's power supply must not be taken directly from the + battery.
- E: Maximum current of 200 mA
- F: Relay

For example, the following relays may be used:

40 Ampere relay, CARTIER reference = 20 240 041

20 Ampere relay, CARTIER reference = 29 201 041

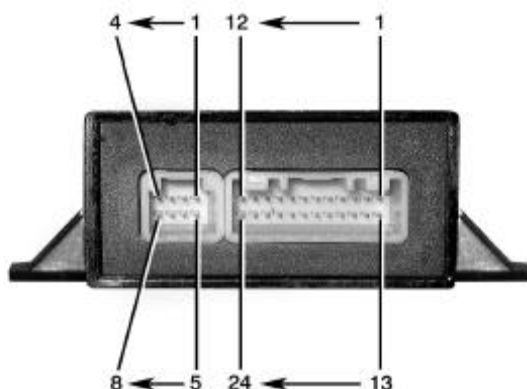
N.B.: It is vital that these relays be fitted with a freewheel diode.

3) Analogue outputs (PWM)

These 2 outputs comply with Renault specification 36-00-100 UNI-B (45 mA, 10.5 at 16V)

- Vehicle speed signal:
$$\text{speed (km/h)} = \frac{\text{frequency (Hz)} \times 3.6}{5}$$

- Engine speed signal: 2 pulses per engine rev, $0 < \text{engine speed} < 7000 \text{ rpm}$



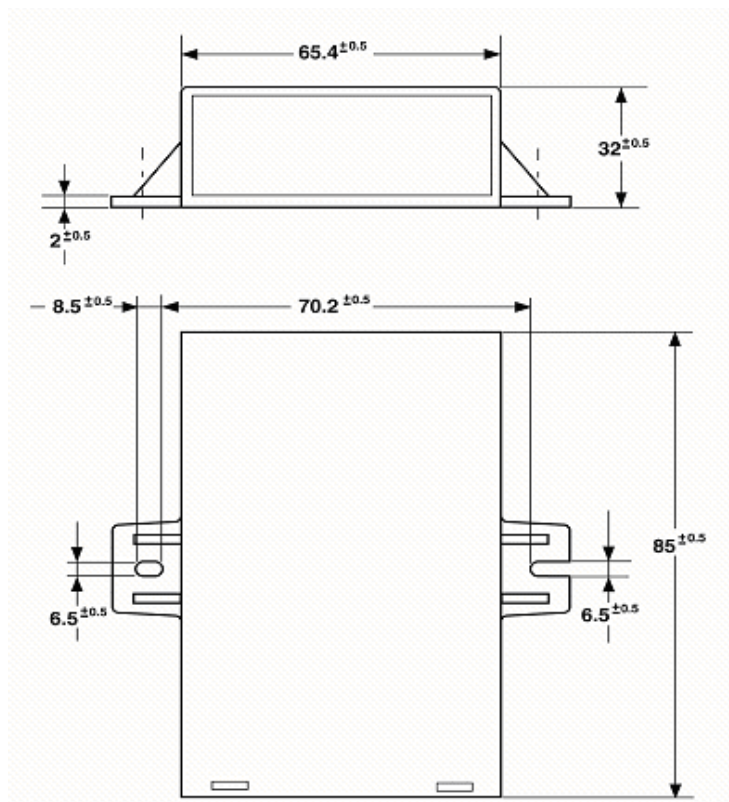
8-WAY CONNECTOR			
Pin			Description
1			(+) Battery
2			K line
3			CAN L1
4			CAN H1
5			Ground
6			Ground
7			Ground
8			Ground

24-WAY CONNECTOR			
Track No.	Type of output	Description	
1	Binary 2	Brake position	
2	Binary 1	Air conditioning operation authorisation	
3	Analogue	Vehicle speed	
4	Analogue	Engine speed	
5	Binary 11		
6	Binary 13		
7	Binary 8	Doors information	
8	Binary 7	Ignition key position	
9	Binary 6	Hazard flashers	
10	Binary 5	Flashing indicators	
11	Binary 12		
12	CAN L	CAN L2	
13	Binary 3	Engine running	
14	Binary 4	Clutch position	
15	Binary 9	Central locking	
16	Binary 10		
17		Spare	
18		Spare	
19		Spare	
20		Spare	
21		Spare	
22		Spare	
23		Spare	
24	CAN H	CAN H2	

OPEL MOVANO (X62)
105 – CAN BUS- INTERFACE MODULE, "KC6" OPTION



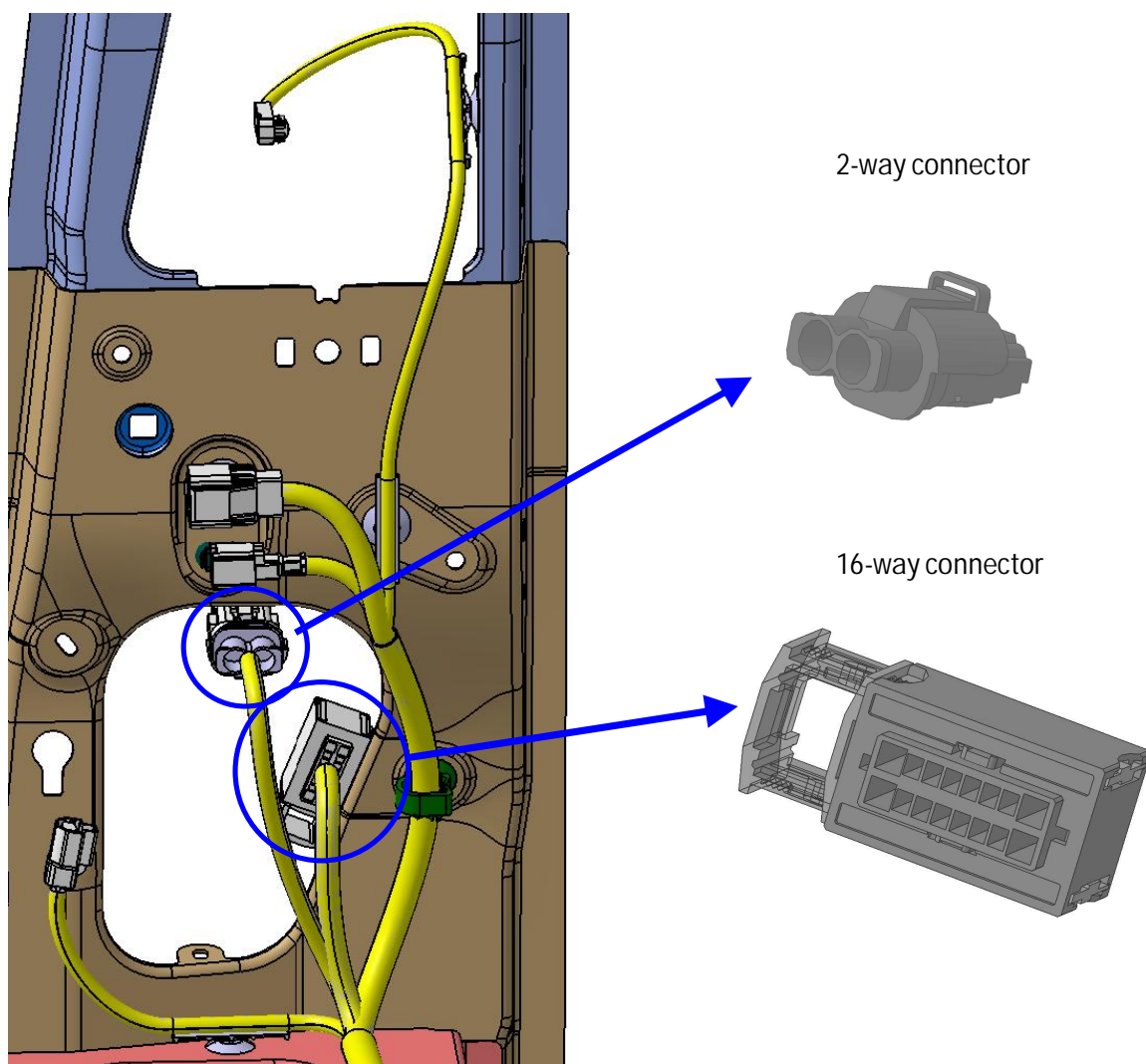
Dimension:



Before working on the vehicle, refer to the chapter 107 “Electrical Connections”.

This option WRF, which is available for the chassis cab and the platform cab, provides 2 stand-by connectors in the right-hand B pillar behind the plastic trim. These connectors provide “engine running” information, can be used to recreate the electrical functions of the van in a separate cell and provide power supplies.

LOCATION

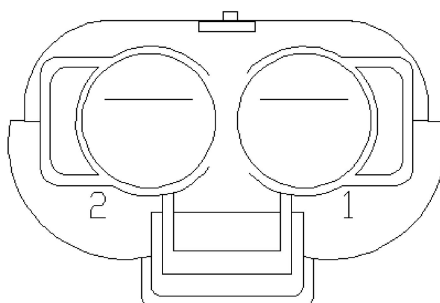


2-WAY CONECTOR

This connector is strictly identical to the one described in technical data chapter 104-Connector for the "KPD" option adaptation.

The maximum permanent current of this power supply must not exceed 40A. This line is protected by 50A fuse F6 in the engine interconnections unit.

ASSIGNMENT OF 2-WAY CONNECTOR WAYS



Way number	Assignment
Way 1 (BP23)	+12 V direct battery power supply for maximum consumption of 40 A (wire cross section 7 mm ²). 50 A fuse protection.
Way 2 (MAN32)	Ground (wire cross section 7 mm ² large enough to adapt to the current of the +12 V battery).

Important:

This power supply is connected directly to the battery. The vehicle is therefore not protected by the energy management system. Risk of battery draining.

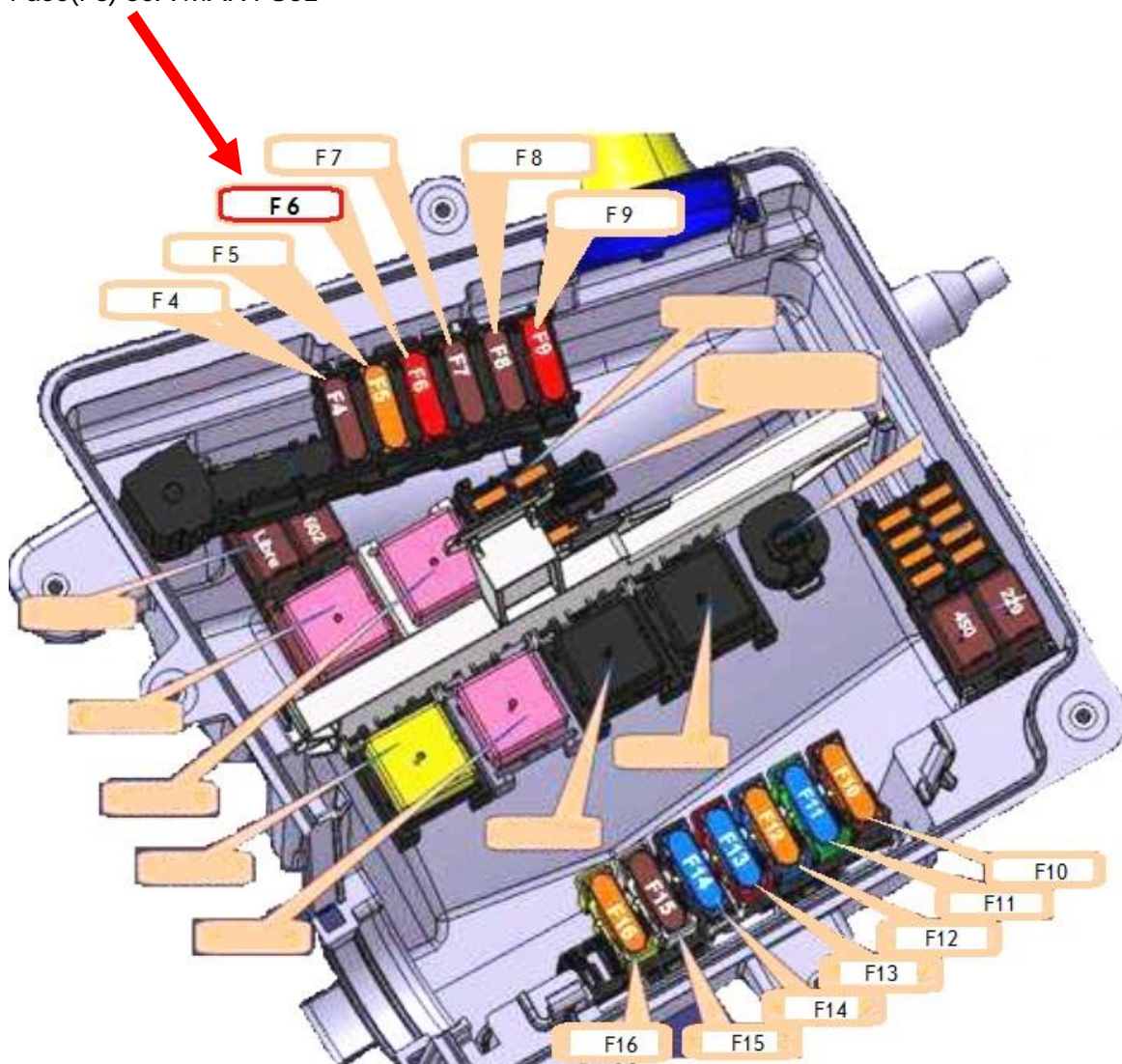
The counterpart to this connector is already fitted to the wiring but it is still necessary to obtain the contacts for this connector.

Connector	Wire cross section	Contact part number	Supplier reference	Supplier
	3 to 6 mm ²		P790861	TYCO
	7 to 10 mm ²		P790862	TYCO

Location of the 2-way connector fuse for the "WRF" option

For further information see chapter 117 - Engine Interconnections Unit.

Fuse(F6) 50A MAX FUSE



16-WAY CONNECTOR

ASSIGNMENT OF 16-WAY CONNECTOR

	16	15	14	13	12	11	10	9
	8	7	6	5	4	3	2	1

N.B.:

The width of the contact for ways 1, 8, 9 and 16 is 2.8 mm; the width for the other ways is 1.5 mm.

Way number	Assignment
Way 1 (20BK)	Analogue door closing control signal (<i>wire cross section 2 mm²</i>)
Way 2 (87T)	Logical boot lock switch information signal (<i>wire cross section 0.35 mm²</i>)
Way 3 (BPT2)	Delayed +12 V 2 A power supply for courtesy lights, controlled by the passenger compartment ECU (UCH) (<i>wire cross section 0.5 mm²</i>)
Way 4 (LPG)	3 A left-hand side light power supply (<i>wire cross section 0.5 mm²</i>)
Way 5 (34D)	+ <i>right-hand rear speaker</i> (<i>wire cross section 1 mm²</i>)
Way 6 (34B)	- <i>left-hand rear speaker</i> (<i>wire cross section 1 mm²</i>)
Way 7 (BMT1)	"Engine running" information, 10 A fuse shared by ways 7 and 8 (<i>wire cross section 1.5 mm²</i>)
Way 8 (SBP4)	" +12 V offloaded current distribution power supply" , 10 A fuse shared by ways 7 and 8 (<i>wire cross section 1.5 mm²</i>)
Way 9 (142K)	Analogue door closing control signal (<i>wire cross section 2 mm²</i>)
Way 10 (65A)	5 A 3 rd brake light power supply (<i>wire cross section 0.5 mm²</i>)
Way 11 (13M)	Progressive ground for 2 A courtesy lights, controlled by the passenger compartment ECU (UCH) (<i>wire cross section 0.35 mm²</i>)
Way 12 (LPD)	3 A right-hand side light power supply (<i>wire cross section 0.5 mm²</i>)
Way 13 (34C)	- <i>right-hand rear speaker</i> (<i>wire cross section 1 mm²</i>)
Way 14 (34A)	+ <i>left-hand rear speaker</i> (<i>wire cross section 1 mm²</i>)
Way 15	Reserve
Way 16 (20W)	Analogue door super lock signal (<i>wire cross section 2 mm²</i>)

Important:

The signals for ways 1, 2, 9 and 16 can only be used to control standard locking (panel van locks) and are only suitable for 3 locks. For any other use, a relay has to be used.

For ways 11 and 13, if a relay is used, a panel switch should be added to replace the 13M link. (See courtesy light sheet).

Ways 7 and 8 are protected by a single 10A fuse (F28). The accumulated currents of the 2 lines must not exceed 8A. Above 8A, a relay has to be used. When the engine is off, the energy management system can offload these functions to save enough battery power to start the vehicle.

The counterpart to this connector is already fitted to the wiring but it is still necessary to obtain the contacts for this connector.

Connector	Wire cross section	Contact part number	Supplier reference	Supplier
	1,5 : 0.35 to 0.75 mm ²		211CL2S1160	FCI
	1,5 : 1 to 2 mm ²		211CL2S2160	FCI
	2,8 : 0.35 to 0.75 mm ²		211CL3S1160	FCI
	2,8 : 1 to 2.5 mm ²		211CL3S2160	FCI
	2,8 : 2.5 to 5 mm ²		211CL3S3120	FCI

OPEL MOVANO (X62)
106 – CELL WIRING CONNECTION OPTION WRF



Locally remove the door entry seal on the "B" pillar side.



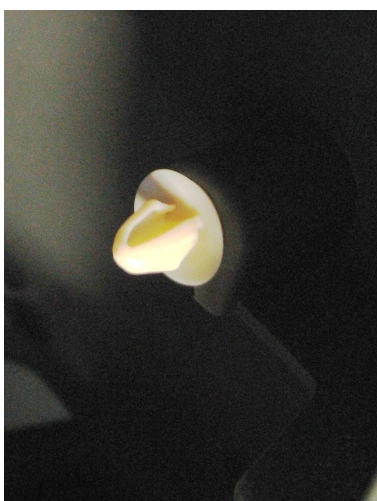
Lever with a flat tool to unhook the lower section of the trim



Retrieve the connector from the joint



check that the clips on the interior trim are in place.



If necessary, put the clip back into its housing before reassembly.



Before final reassembly of the trim and the door seal,

1. General Overview

Before carrying out any operations, it is imperative that the battery's negative terminal be disconnected.

The negative terminal should only be reconnected after ensuring that all the disconnected elements have been reconnected (especially the steering wheel controls).

As the vehicle is multiplexed, any change to the wiring may cause the vehicle to malfunction or to break down. It is therefore strongly advised not to make any changes to the original wiring. Modification of the CAN network wiring is prohibited.

If any devices are added, the power consumption requirements must be compared with the authorised values given in the table in the "Available currents" sheet.

Use of electrical options, such as "KC6", "KPD" and "KC5", is recommended. Please see the corresponding sheets.

The rating of a fuse is a wiring protection value and not an available energy value. It is therefore forbidden to change the fuse ratings.

The covering protecting the wires must be preserved and maintain its effectiveness after modification.

The electricity pages of the General Technical Conversion Guide must also be consulted before any modifications are made to the vehicle.

Failure to follow these recommendations will invalidate the manufacturer's warranty.

2. Electrical power

Any electrical power greater than 10 Ah sampled on the main vehicle battery must be sampled with the engine running (unless there is a multi-battery with coupling device architecture).

With the engine off, up to 10 Ah may be sampled on the main battery, e.g. 20 A for 30 minutes, 5 A for 2 hours, etc.

Comment:

The vehicle has an energy management system that alerts the driver if the battery load reaches an abnormal level. Any electrical sampling that is too big with the engine running is likely to result in misunderstandings and customer complaints (Alert message repeatedly displayed on the dashboard).

Any electrical power sampled on the vehicle battery must be sampled on the battery terminal block. Please refer to the "Connection to battery terminal" sheets.

All power supplies must be fused.

3. Anti-lock braking system (ABS)

Under no circumstances may a power cable be fitted less than 100 mm from any component of the ABS system (ABS unit, ECU, wiring and sensors).

In addition, for the anti-lock braking system (ABS) to function correctly, notwithstanding any specific agreement, we advise against servicing the brake contactor on the pedal assembly.

The ABS wiring may not be extended.

4. Alternator

The connection of the alternator to the vehicle's electrical systems is multiplexed. Any servicing of electrical connections on the alternator will lead to malfunction of the alternator and/or an electronic ECU, which may result in the destruction of these systems and/or cause the vehicle to break down. As a result, any connection on the alternator is prohibited.

The alternator communicates with the vehicle's electronic ECUs. Therefore, the alternator cannot be changed unless it is changed for an alternator that is exactly the same as the original. Failure to follow this rule will lead to malfunction of the alternator and/or an electronic ECU, which may result in the destruction of these systems and/or cause the vehicle to break down.

Before working on the vehicle, refer to chapter 107 “Electrical Connections”.

The +12 V current distribution power supply is a power supply that can be temporarily unavailable to save the battery. An energy management system constantly checks the battery charge status.

Connecting electrical accessories while the engine is off will discharge the battery. Do not exceed the maximum power consumption.

Electrical accessories that are connected must comply with the electromagnetic compatibility requirements laid down in DIN VDE 40 839.

This +12 V current distribution power supply is available on the connectors of the “KPD” and “KC5” options but also through the accessory sockets. Please refer to the sheets dealing with the “KPD” and “KC5” options for further information.

A +12 V current distribution fused power supply can be obtained by using the accessory sockets (or cigar lighter).

Two accessory sockets are available on the dashboard.

- Upper accessory socket (10 A fuse F2 and F3 in the passenger compartment fuse and relay box),
- Lower accessory socket (10 A fuse F4 in the passenger compartment fuse and relay box),

Depending on the version and options, an accessory socket is possible in the panel van’s loading area. The socket is located on the left-hand extreme rear pillar.

- Rear accessory socket (10 A fuse F4 in the passenger compartment fuse and relay box),

Important:

- *This +12 V current distribution supply is temporarily cut off when the starter motor is activated.*
- *Do not connect any current-delivering accessories, e.g. electrical charging devices or batteries.*

LOCATION OF ACCESSORY SOCKETS ON THE DASHBOARD



LOCATION OF ACCESSORY SOCKETS ON THE LOAD COMPARTMENT



Before working on the vehicle, refer to chapter 107 “Electrical Connections”.

In the event of a lot of electrical power being taken, the electrical assessment may have an adverse effect on the battery charge. The power take-off therefore needs to be conditioned with the engine running information.

This information can be accessed inside the vehicle in four different ways depending on the vehicle's equipment level:

- for all vehicles using a specific electrical wire,
- with the “KPD” option (adaptation connector) - see corresponding sheet.
- with the “KC5” option (cell connector adaptation) - see corresponding sheet.
- with the “KC6” option (conversion unit) - see corresponding sheet.

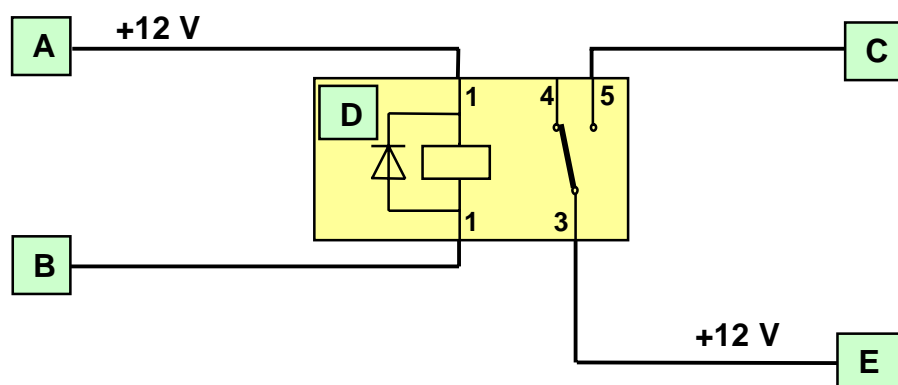
A violet 0.5 mm² idle cable is located underneath the dashboard and can be used to recover the engine running information. This cable can be found behind the passenger compartment fuse and relay box in the “KPD” connector location.

This cable is directly connected to the engine ECU. When the engine is running, it is connected to the ground but otherwise the circuit is open.

Care therefore needs to be taken when connecting this cable:

- Follow the wiring instructions in the General Technical Conversion Guide.
- Never connect a consumer or relay greater than 400 mA to this cable.
- Use a relay with a free wheel diode to control the system that has been added.

CONNECTION DIAGRAM



- A: +12 V circuit distribution power supply
- B: Engine running information available on the idle cable (connection 48D)
- C: Additional equipment
- D: Relay with a free wheel diode
- E: +12 V battery power supply

The accelerated idle function is used to increase the vehicle's idle speed to give more power and/or electrical energy.

The standard vehicle idle is 800 rpm.

The accelerated idle's default value is 1,000 rpm. This value may be set to between 1,000 and 2,000 rpm in 100 rpm increments. This is done using the "Clip" diagnostics tool in the Opel dealer network.

For an idle value between 1,000 and 1,300 rpm, the vehicle can be running (except for vehicles with a robotized gearbox in which case the vehicle must be stopped). Above this, the vehicle must be stopped.

It is also possible to have the accelerated idle function with the "KPD" option. Please refer to the relevant sheet.

N.B.:

The accelerated idle function is not possible on a vehicle that does not have the "UF3" option or the "KPD" option.

1. Operation and safety

The driver controls operation of the accelerated idle by pressing a button on the dashboard.

The accelerated idle is activated approximately 4 seconds after engine start-up, even if the button is on when the engine is started.

The function is deactivated if the water temperature warning light or any other warning light highlighting an engine risk comes on.

For vehicles with a mechanical gearbox:

- Deactivation possible at a vehicle speed of between 0 and 30 km/h (idle between 1,000 and 1,300 rpm).
- Deactivation possible at zero vehicle speed (idle greater than 1,300 rpm).
- Disengaging the clutch deactivates the accelerated idle.
- Above an idle speed of 1,300 rpm, pressing the accelerator pedal deactivates the accelerated idle.

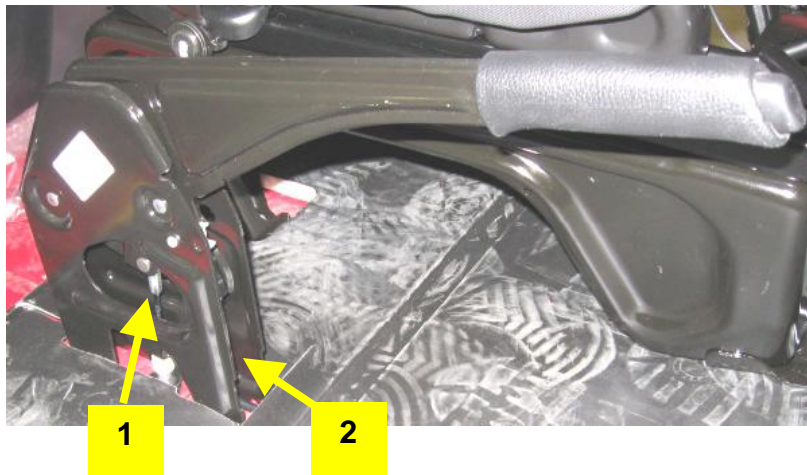
For vehicles with a robotized gearbox:

- Activation in neutral gear.
- Pressing the accelerator pedal deactivates the accelerated idle.
- Deactivation for any speed above zero.

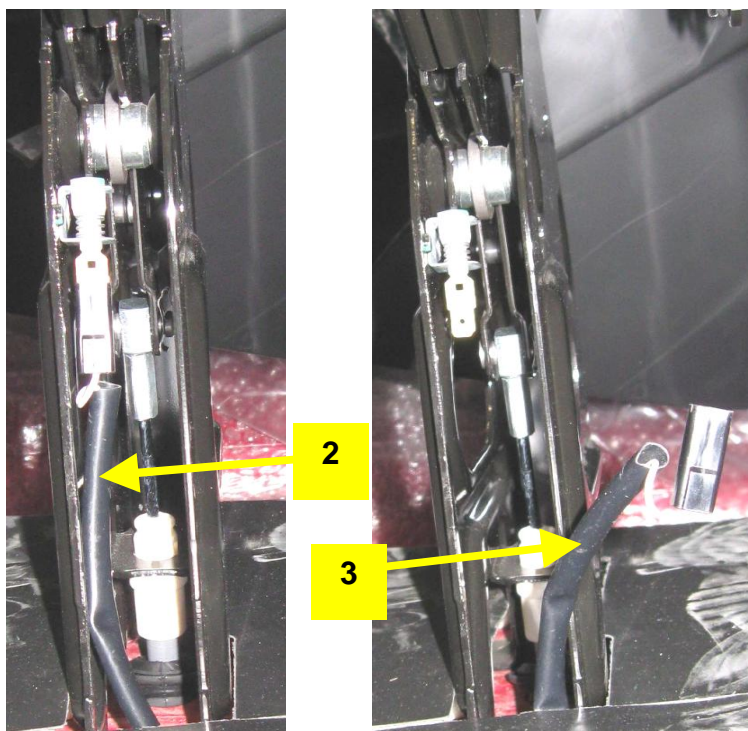
Before working on the vehicle, refer to chapter 107 “Electrical Connections”.

The parking brake information is grounded when the brake is applied. This connection can be accessed on the handbrake.

HANDBRAKE



- 1: Handbrake
- 2: Handbrake cable
- 3: Handbrake cable (disconnected)





VAUXHALL



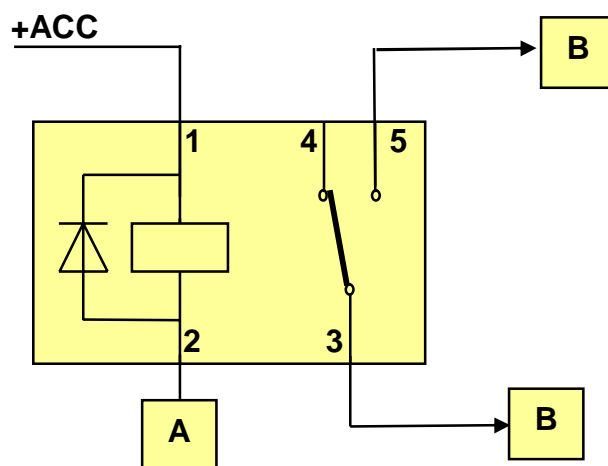
Wir leben Autos.

To recover this information, it must be sent using a relay with a free wheel diode. For example, the following OPEL parts may be used:

40 Amp relay, Cartier Reference: 20240041

20 Amp relay, Cartier Reference: 29201041

CONNECTION DIAGRAM



A: Handbrake information

B: Dry contact to recover handbrake information

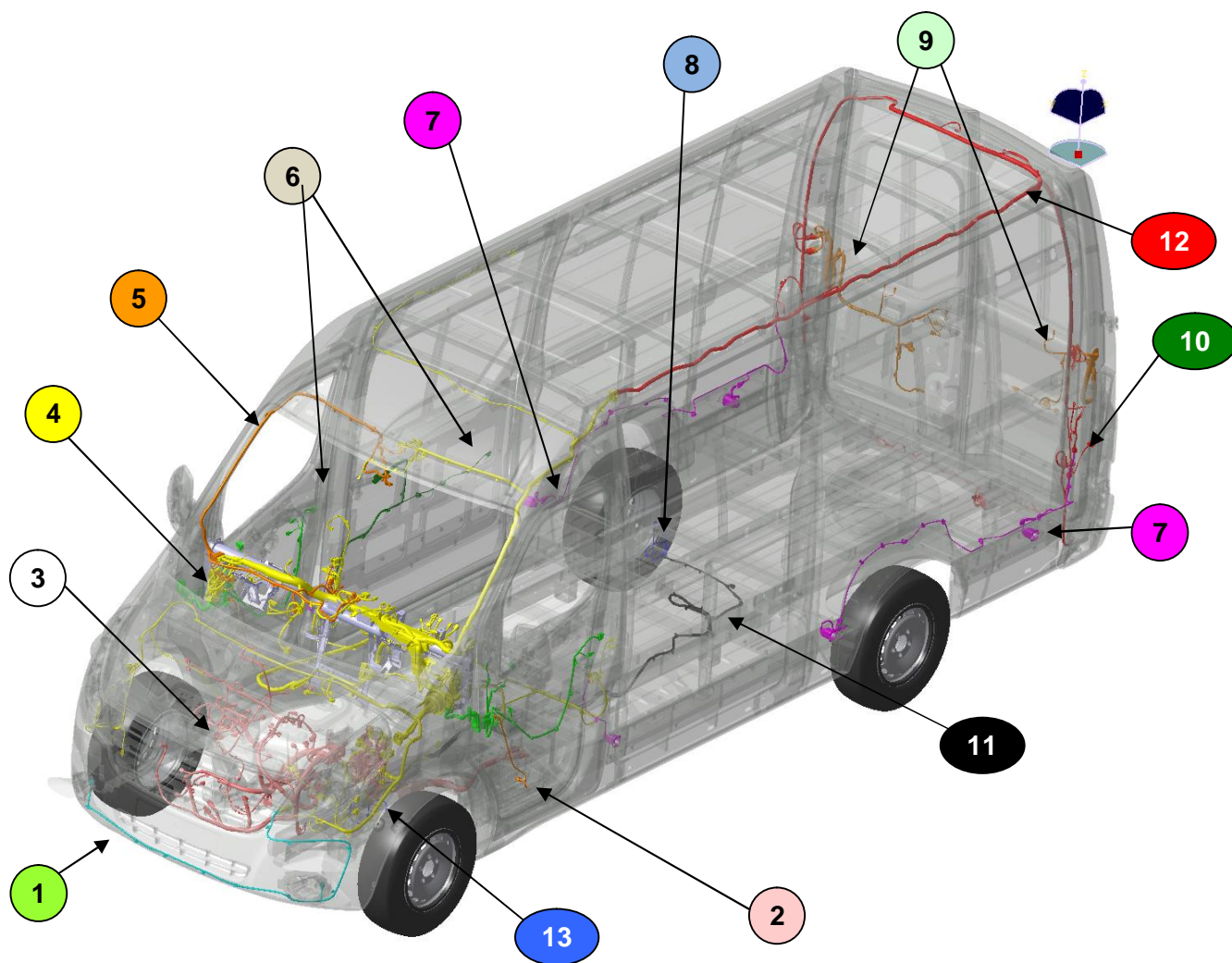
+ACC: accessory power supply, 1st notch on the ignition key

Important:

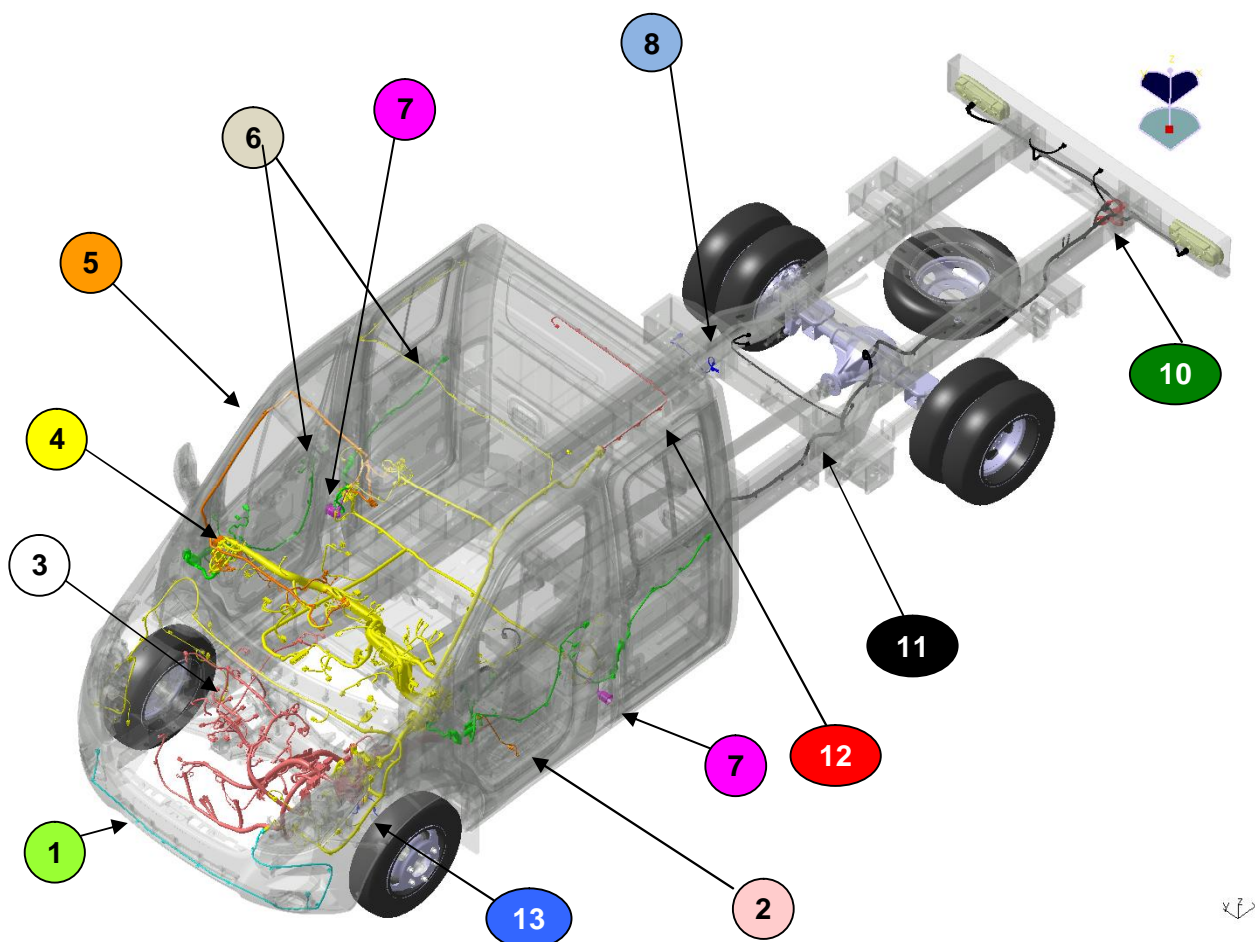
The relay's power supply must not be taken directly from the battery +terminal.

Before working on the vehicle, refer to chapter 107 “Electrical Connections”.

PANEL VAN WIRING LOCATIONS



CHASSIS CAB WIRING LOCATIONS

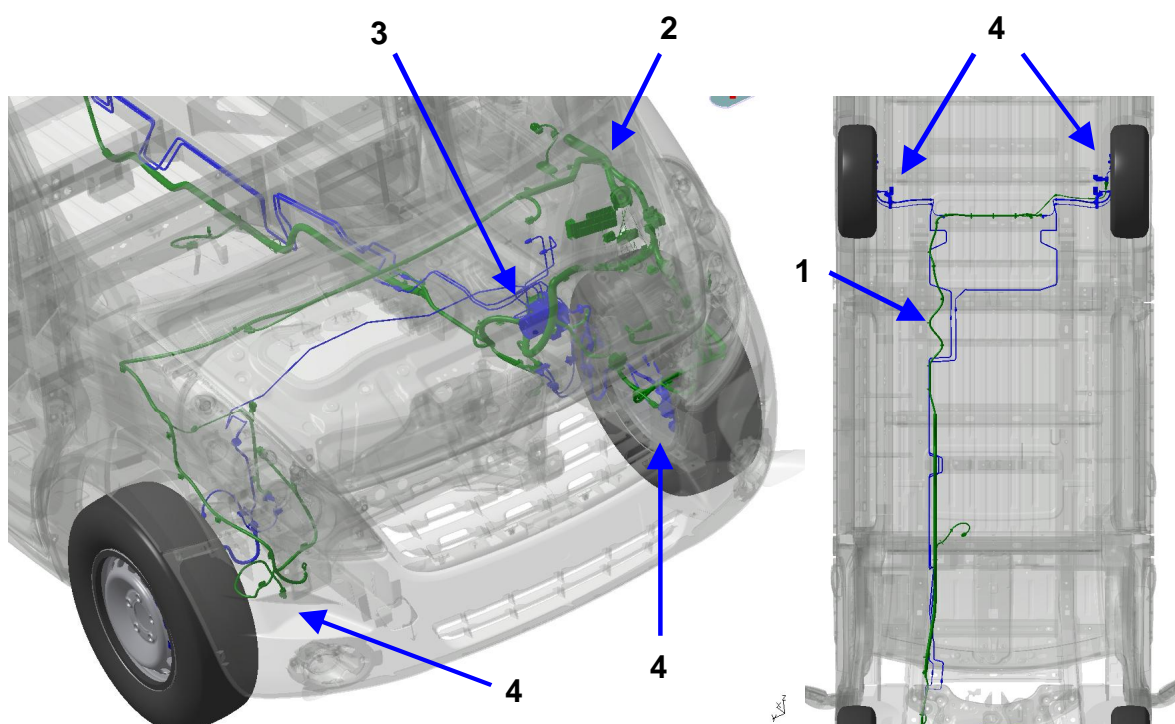


N°	DESCRIPTION
1	Front bumper wiring
2	Door sill light wiring
3	Engine wiring
4	Dashboard wiring
5	Multimedia wiring
6	Front door, sliding door wiring
7	Additional side light wiring
8	Rear pad wear indicator wiring
9	Right and left-hand side swing door wiring
10	Coupling and bumper wiring
11	Under-body wiring
12	Rear wiring
13	Front pad wear indicator wiring

N.B.: *Wiring locations for platform cabs are similar to those for chassis cabs.*

Additional power cables may not be installed less than 100 mm from any ABS system components (ECU, wiring and sensors), electronic units or ECUs.

ROUTING OF WIRING AND BRAKE PIPES
(wiring in green, pipes and others in blue)



- 1: Central and rear section ABS wiring (in green)
- 2: Front section ABS wiring (in green)
- 3: ABS unit and ECU
- 4: ABS sensors

N.B.:

- *Modifications are not permitted to ABS wiring.*
- *For more information, see also Chapter 69.*

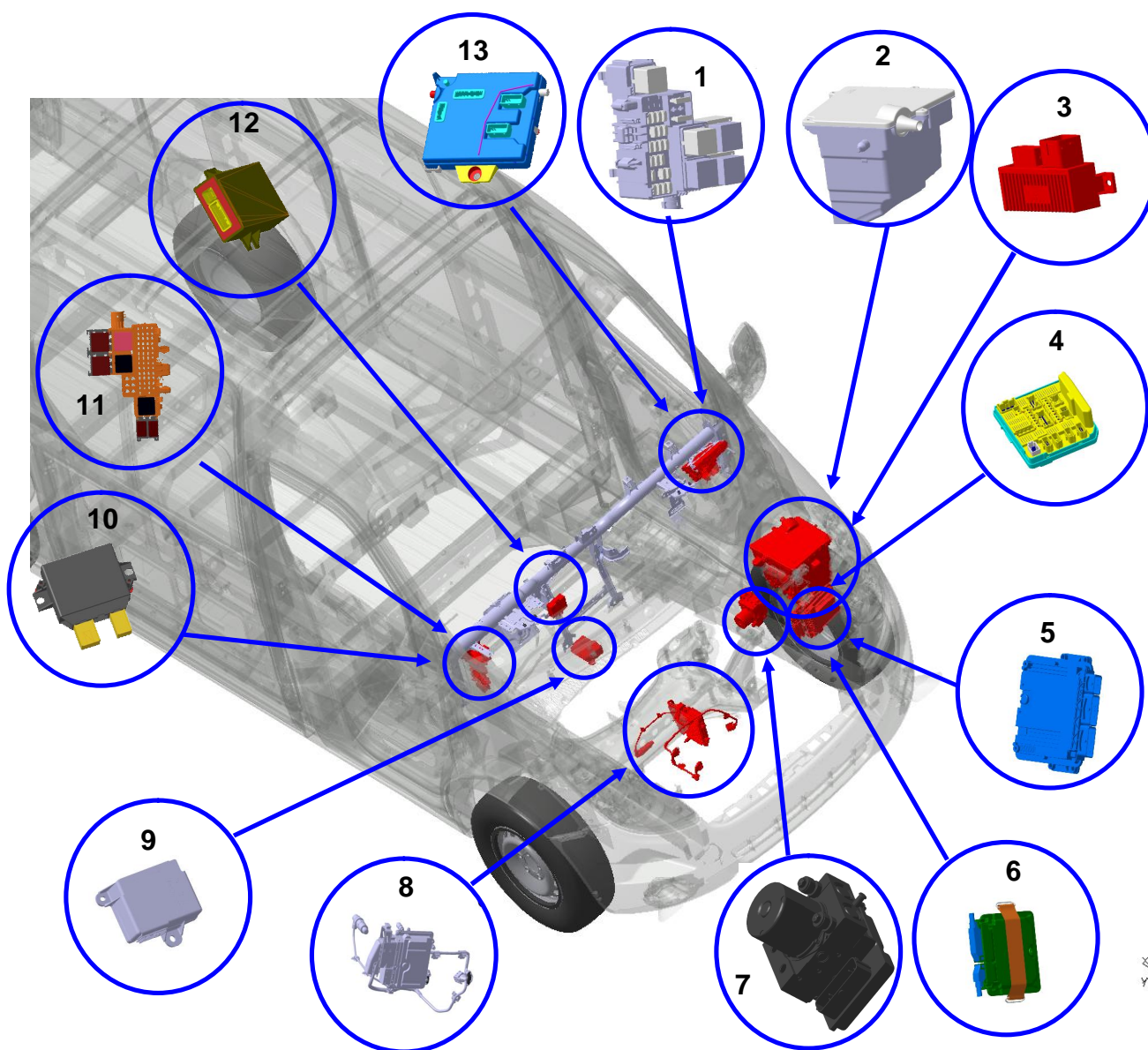
OPEL MOVANO (X62)
115 – INSTALLATION OF ELECTRICAL COMPONENTS



VAUXHALL



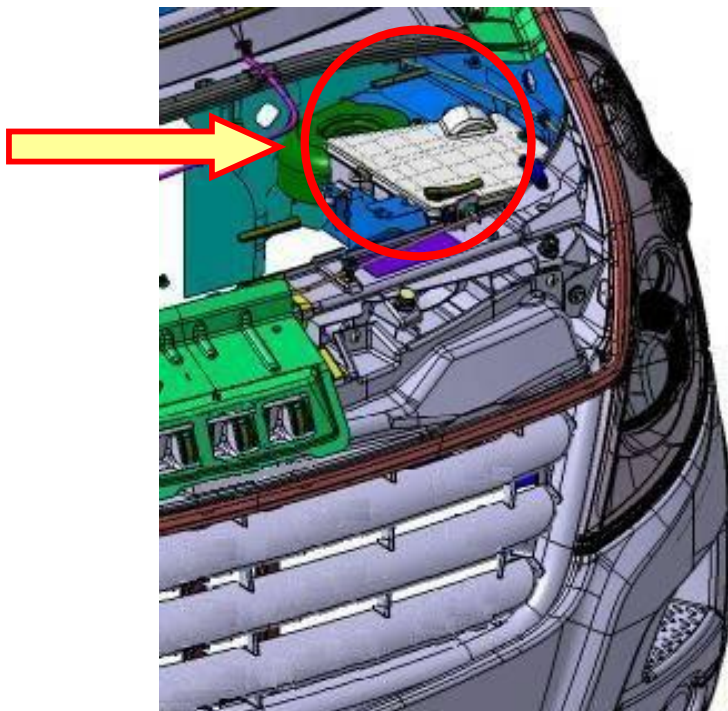
Wir leben Autos.



N°	DESCRIPTION
1	BFRH (passenger compartment fuse-relay box)
2	BIM (engine interconnections unit)
3	Thermoplunger unit
4	USM (Undercoat Switching Module) Control unit: voltage power supply control
5	Injection computer
6 (option)	BVR ECU (robotised gearbox) Front wheel drive
7	ABS/ESP hydraulic unit
8 (option)	BVR ECU (robotised gearbox) Rear wheel drive
9	Airbag detection unit
10 (option)	Parking assistance computer
11 (bus option)	BFRH (passenger compartment fuse-relay box)
12 (option)	KC6 (Conversion Unit)
13	UCH (Passenger Compartment Unit)

The engine interconnections unit can be found to the left of the engine compartment in front of the shock absorber mounting. This unit contains the power supply fuse board and the protection and switching unit (UPC).

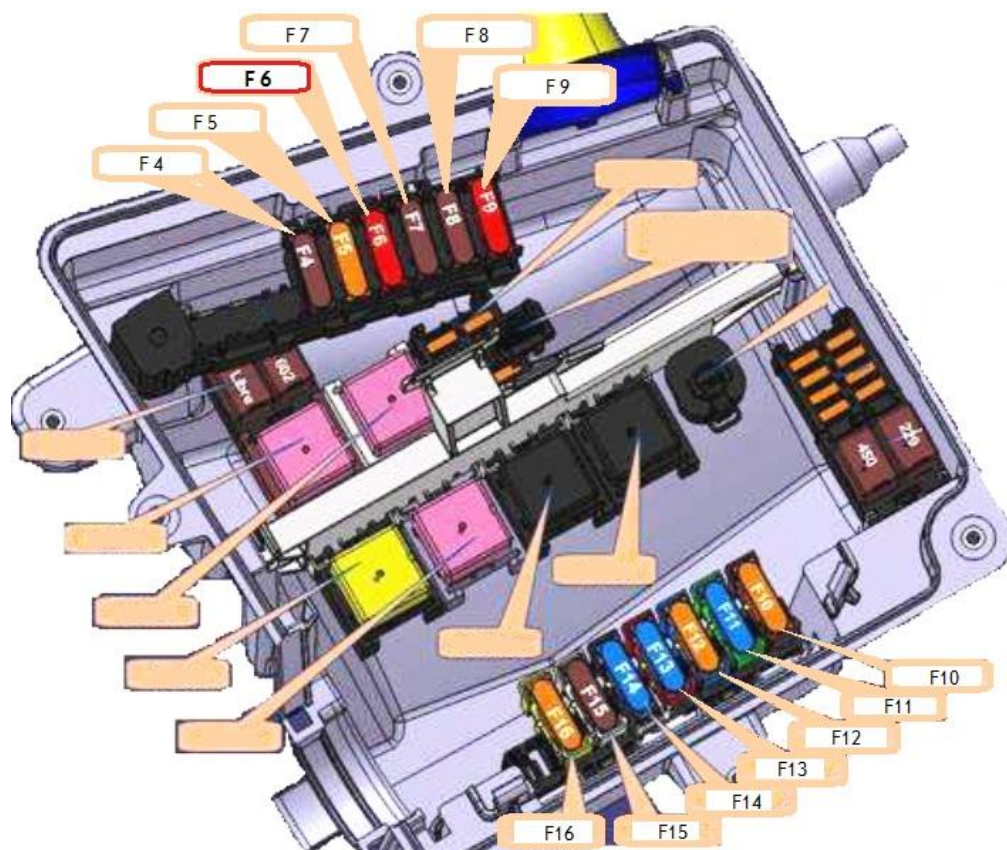
POSITION OF UNIT IN THE ENGINE COMPARTMENT



Warning:

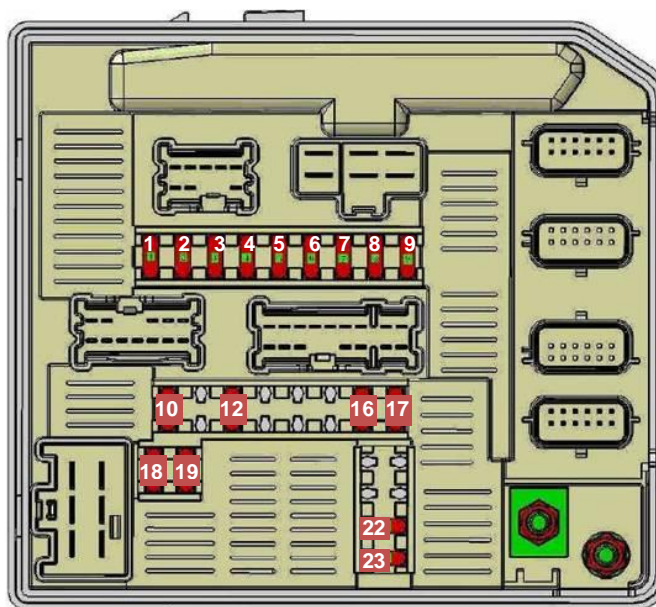
These indications are given for information purposes only. Changing a fuse or connecting electrically to a UPC connection is prohibited.

INTERIOR OF THE ENGINE INTERCONNECTIONS UNIT



Fuse	Type	Rating	Connection	Function
F1		-	-	-
F2		-	-	-
F3		-	-	-
F4	Maxi Fuse	40 A	BP8	ABS ECU
F5	Maxi Fuse	50 A	BP9	Additional heating relay 1
F6	Maxi Fuse	50 A	BP23	Conversion
F7	Maxi Fuse	70 A	BP91	Additional heating relay 2
F8	Maxi Fuse	70 A	BP11	Rear lights, passenger compartment fuse-relay box, diesel heater resistance
F9	Maxi Fuse	70 A	BP12	Passenger compartment relay and fuse box
F10	Maxi Fuse	50 A	BP71	Motor fan relay 3, motor fan relays (rating depending on vehicle spec.)
F10	Maxi Fuse	40 A		
F11	Maxi Fuse	40 A	BP7	Motor fan speed Relay 1, Motor fan speed Relay 2 (rating depending on vehicle spec.)
F11	Maxi Fuse	50 A		
F11	Maxi Fuse	60 A		
F12	Maxi Fuse	40 A	BP1C	Starter motor
F13	Maxi Fuse	60 A	BP9E	Heating interface unit
F14	Maxi Fuse	60 A	BP9J	Heating interface unit
F15	Maxi Fuse	70 A	BP17	Diesel glow plug relay unit
F16	Maxi Fuse	40 A	BP36	Gearbox electro pump unit relay
F16	Maxi Fuse	50 A		Fuse box 2

PROTECTION AND SWITCHING UNIT



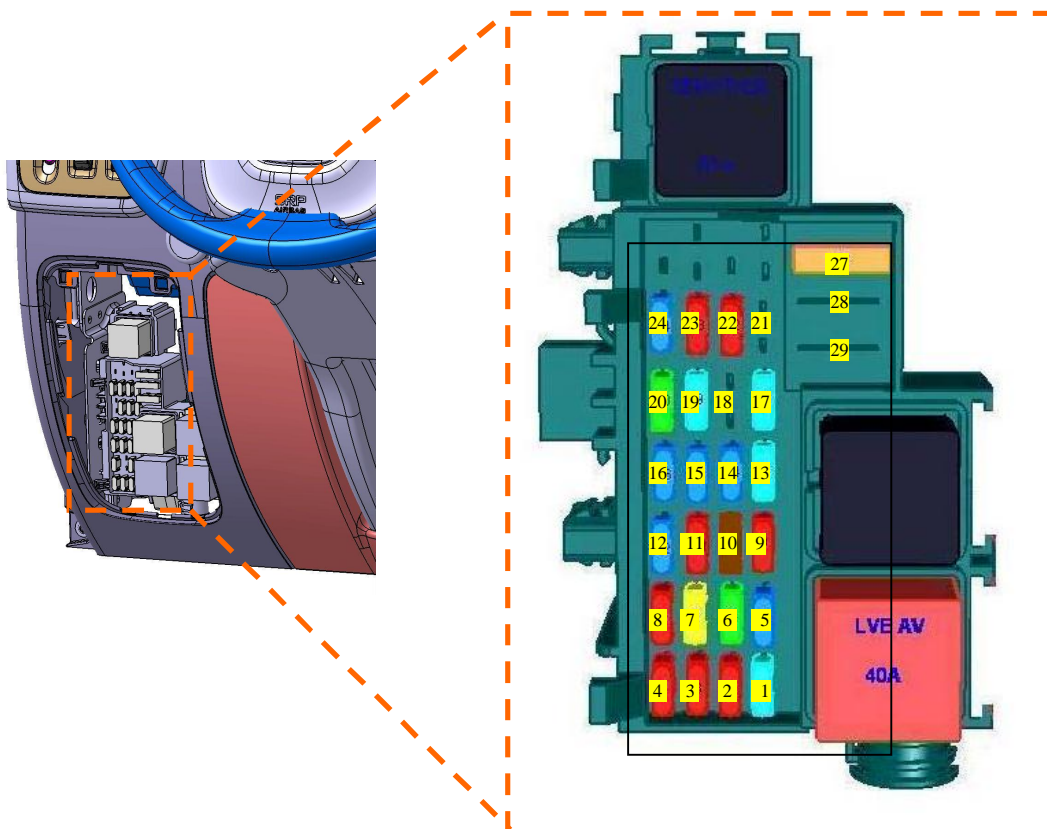
Fuse	Type	Rating	Conn.	Function
F1	Min. Fuse	7.5 A	LPD LPDA	Right side light
F2	Min. Fuse	7.5 A	LPG LPGA	Left side light
F3	Min. Fuse	10 A	CPDB CPD	Right dipped beam lights
F4	Min. Fuse	10 A	CPG	Left dipped beam lights
F5	Min. Fuse	20 A	8E 8F	Fog lamps
F6	Min. Fuse	10 A	RPG	Left main beam light
F7	Min. Fuse	10 A	RPD	Right main beam light
F8	Min. Fuse	25 A	BP14	ABS power supply
F9	Min. Fuse	30 A	14L 14K	Windscreen wiper
F10	Min. Fuse	10 A	AP25	Airbag PIS (primary ignition supply)
F11	-	-	-	-
F12	Min. Fuse	20 A	BP42	Gearbox ECU power supply (Front wheel drive)
F13	-	-	-	-
F14	-	-	-	-
F15	-	-	-	-
F16	Min. Fuse	5 A	AP4	Gearbox PIS (primary ignition supply)
F17	Min. Fuse	7.5 A	AP43	Passenger compartment PIS (primary ignition supply)
F18	Min. Fuse	5 A	AP15	Injection ECU/diesel heater relay
F19	Min. Fuse	10 A	AP11	Rear running lights PIS (primary ignition supply)
F20	-	-	-	-
F21	-	-	-	-
F22	Min. Fuse	10 A	38R	Air conditioning (compressor)
F23	Min. Fuse	5 A	15LP	Defrosting (relay control)

Before working on the vehicle, refer to chapter 107 “Electrical Connections”.

This fuse-relay box is located under the dashboard, on the left above the driver’s feet (left-hand drive vehicles) or above the passenger’s feet (right-hand drive vehicles).

To access it, the access flap must be removed.

POSITION OF THE PASSENGER COMPARTMENT FUSE-RELAY BOX



Depending on the version and the options, some fuses may not be present.

DETAILS OF LEFT PASSENGER COMPARTMENT FUSE-RELAY BOX COMPONENTS

Fuse	Type	Rating	Connection	Function
1	Mini Fuse	10 A	E1 S1	<< SP2 >> Infotainment system, seat heating, (Relais servitude 1. Relais moteur tournant)
2	Mini Fuse	10 A	E2 S2	<< SP4 >> Power outlet 1
3	Mini Fuse	10 A	E3 S3	<< SP4G >> cigarette lighter
4	Mini Fuse	10 A	E4 S4	<< SP4 >> Power outlet 2

OPEL MOVANO (X62)
118 – PASSENGER COMPARTMENT FUSE-RELAY BOX (BFRH)



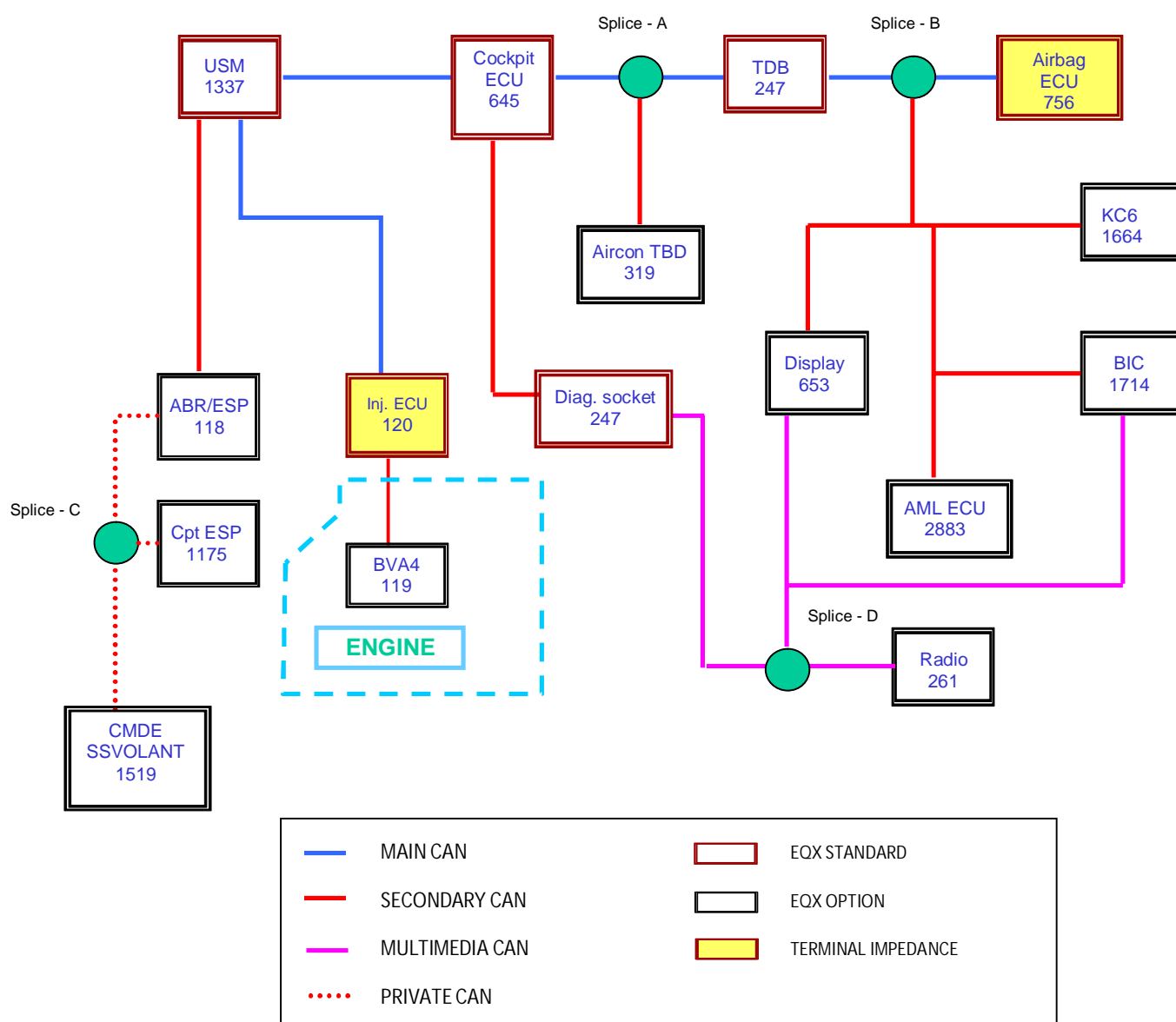
Fuse	Type	Rating	Connection	Function
5	Mini Fuse	5 A	E5 S5	<< BP 69 >> Instrument panel
6	Mini Fuse	30 A	E6 S6	<< BP 3 >> Central locking (UCE Habitacle (CPE, SUPCPE), BFR)
7	Mini Fuse	25 A	E7 S7	<< BP 77 >> Turn signals, rear fog lights, body control module (UCE Habitacle + Bat sécurité)
8	Mini Fuse	5 A	E8 S8	<< BP 75 >> Diagnostic connector
9	Mini Fuse		E9 S9	not used
10	Mini Fuse	5 A	E10 S10	<< BP 97 >> ABS, Electronic Stability Program
11	Mini Fuse	10 A	E11 S11	<< BP 80 >> Interior lights, brake lights
12	Mini Fuse	5 A	E12 S12	<< DP >> Body control module
13	Mini Fuse	15 A	E13 S13	<< SP17 >> Brake light
14	Mini Fuse	5 A	E14 S14	<< SP22 >> Body control module, power windows, air conditioning
15	Mini Fuse	20 A	E15 S15	<< 15K >> Left heated rear window
16	Mini Fuse	20 A	E16 S16	<< 15K >> Right heated rear window
17	Mini Fuse	15 A	E17 S17	<< AP7 >> Windscreen washer (Commandes sous volant)
18	Mini Fuse	5 A	E18 S18	<< AP51 >> Electronic immobiliser
19	Mini Fuse	15 A	E19 S19	<< BP79 >> Heated seats (BFRH2, ADPCNC, adaptation complémentaire)
20	Mini Fuse		E20 S20	not used
21	Mini Fuse	10 A	E21 S21	<< AP10 >> cornering lights
22	Mini Fuse	10 A	E22 S22	<< BCP4 >> Infotainment system, seat heating, vehicle display screen, audio connections, alarm
23	Mini Fuse	5 A	E23 S23	<< BP3A >> Hands-free connection
24	Mini Fuse	10 A	E24 S24	<< BCP3 >> Tachograph
25	Mini Fuse		E25 S25	not used (emplacement diode)
26	Mini Fuse		E26 S26	not used (emplacement diode)
27	Mini Fuse	40 A	AE1 AS1	<< SP3 >> Climate control fan
28	Mini Fuse	10 A	AE2 AS2	<< BP98 >> Additional adaptations (BFRH2, relais ACC délesté, relais servitude 1)
29	Mini Fuse	40 A	AE3 AS3	<< BP70 >> Power windows, body control module

It is necessary to add a supply for the empty fuse locations (reserve). Locations 25 and 26 can be fitted with a diode in place of a fuse.

The multiplexed network enables the ECUs to exchange their data. It complies with the CAN protocol and is connected to the diagnostic socket.

Modifications to the multiplexed network are not permitted.

CAN ARCHITECTURE



N.B.:

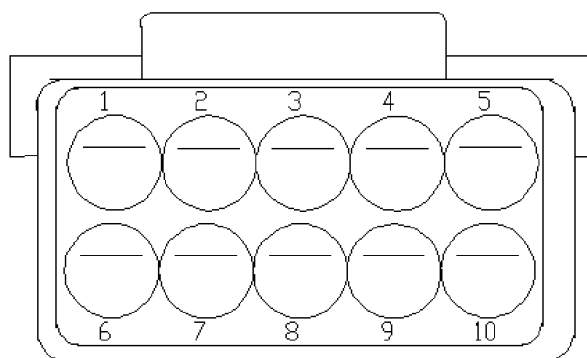
- Control of the multiplexed network is only possible using the "Clip" diagnostics tool in the OPEL / VAUXHALL network.
- If one of the ECUs is replaced, configuration needs to be carried out using the "Clip" diagnostics tool in the OPEL / VAUXHALL network.

Before working on the vehicle, refer to chapter 107 “Electrical Connections”.

1. Right or left front lamps

The information is available directly on the front lamp connectors in the engine compartment.

ASSIGNMENT OF CONNECTOR WAYS



Way number	Assignment
Way 1	Dipped beam light
Way 2	Main beam light
Way 3	
Way 4	Side light
Way 5	
Way 6	Indicator
Way 7	Fixed bending light
Way 8	
Way 9	Ground for side light, indicator and fixed bending light
Way 10	Ground for main beam and dipped beam lights

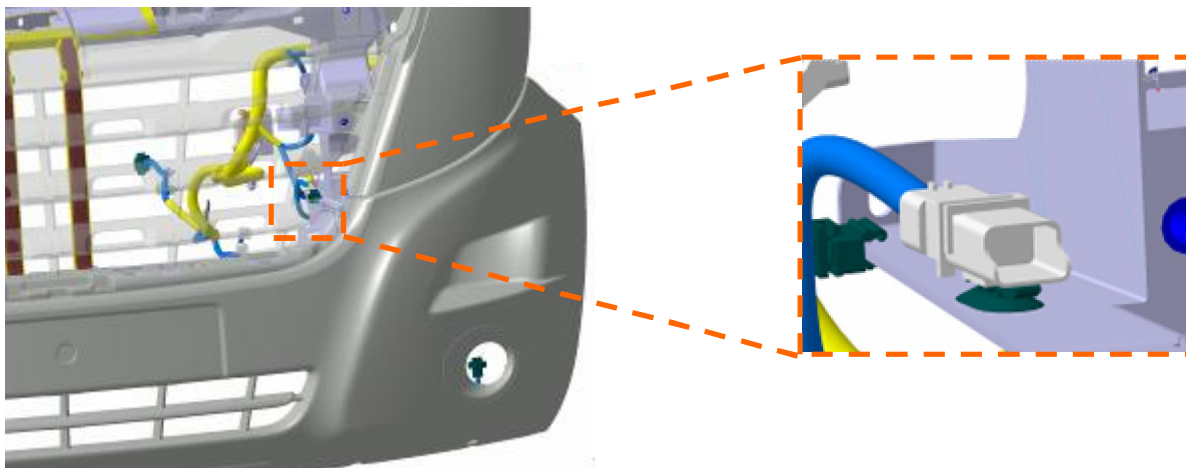
Important:

Each of these connections must only be used to control one single automotive relay; no power available.

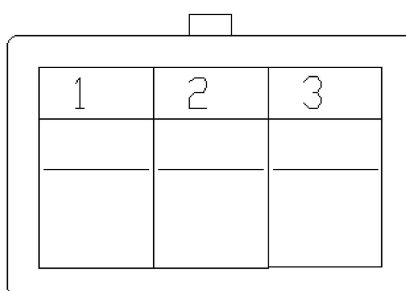
2. Front fog lamps

The information is available on the connection located under the bumper.

CONNECTOR POSITION



ASSIGNMENT OF CONNECTOR WAYS



Way number	Assignment
Way 1	Right fog lamp
Way 2	Left fog lamp
Way 3	Ground

Important:

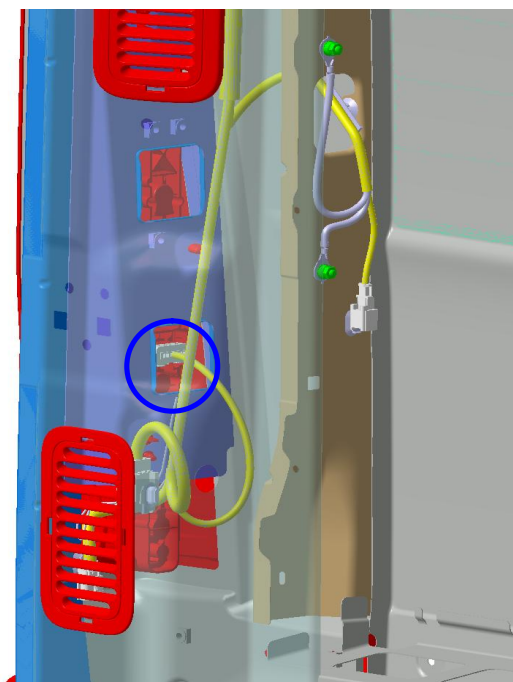
Each of these connections must only be used to control one single automotive relay; no power available.

3. Right or left tail lights

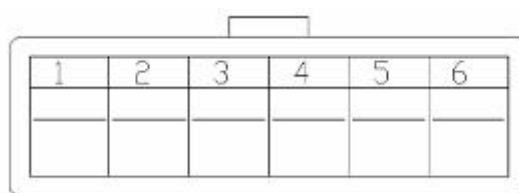
3.1. Panel van

The information is available directly on the tail light connectors in the loading area.

CONNECTOR POSITION



ASSIGNMENT OF CONNECTOR WAYS



Way number	Assignment
Way 1	Turn signal light
Way 2	Side light
Way 3	Brake lamp
Way 4	Ground
Way 5	Fog lamp
Way 6	Reversing lamp

N.B.: *A consumer with the same power as the trailer bulbs can be connected to each of the connections.*

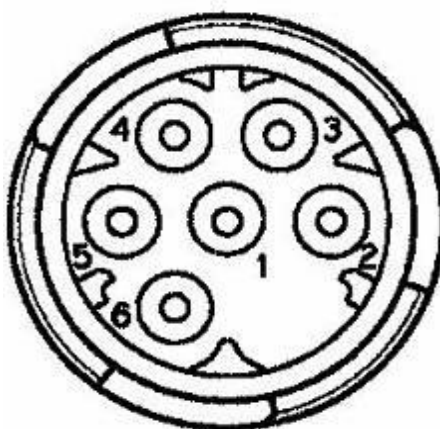
3.2. Chassis cab, chassis double cab and platform cab

The information is available directly on the tail light connectors on the extreme rear cross member.

CONNECTOR POSITION



ASSIGNMENT OF CONNECTOR WAYS



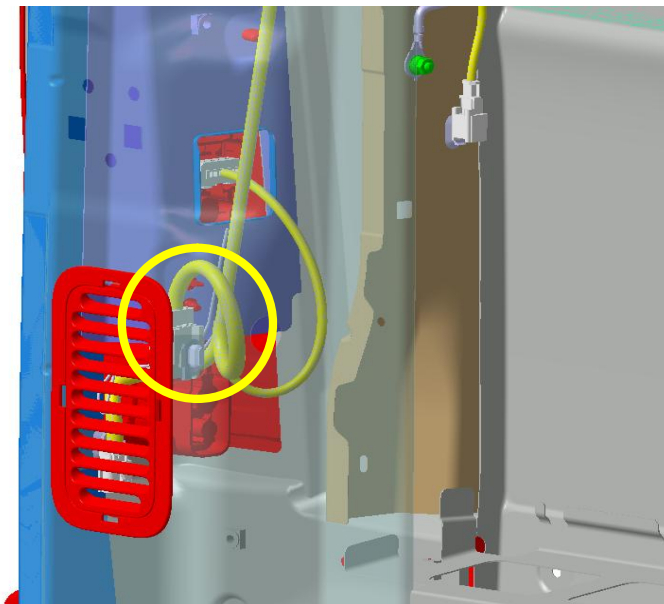
Way number	Assignment
Way 1	Ground
Way 2	Side light
Way 3	Reversing lamp
Way 4	Turn signal light
Way 5	Brake lamp
Way 6	Fog lamp

N.B.: *A consumer with the same power as the trailer bulbs can be connected to each of the connections.*

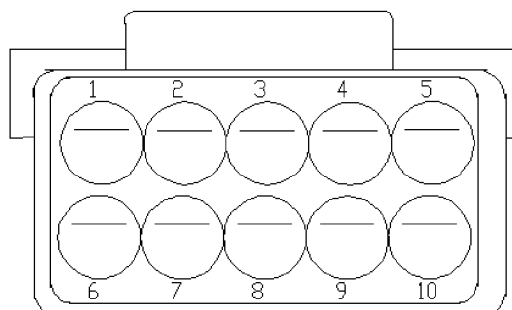
3.3. Versions with trailer coupling connector

All chassis cabs and panel vans with the trailer coupling option ("VR2" option) have this connector.

POSITION OF THE CONNECTOR ON PANEL VANS



ASSIGNMENT OF CONNECTOR WAYS

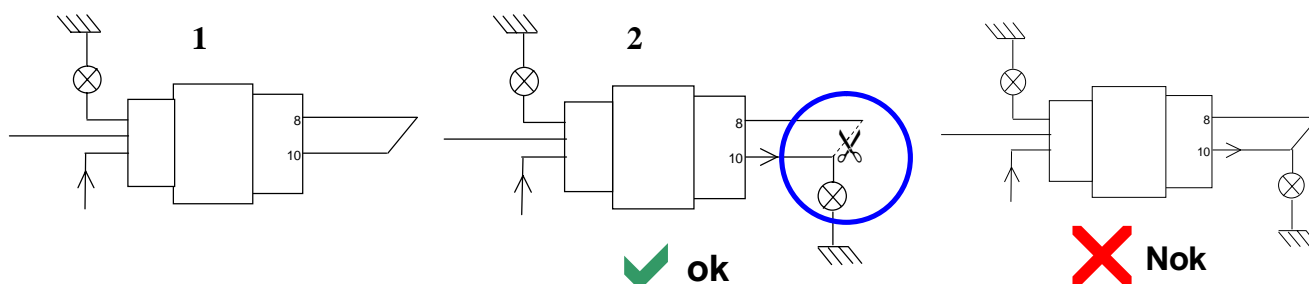


Way number	Assignment
Way 1	Trailer presence information
Way 2	Reverse lamp (21 W)
Way 3	Left side light (5 W)
Way 4	Left turn signal light (21 W)
Way 5	Brake lamp (42 W)
Way 6	Right turn signal light (21 W)
Way 7	Right side light (5 W)
Way 8	Vehicle fog lamp feedback
Way 9	Ground
Way 10	Fog lamp (21 W)

Way 1: Detection of a turn signal fault (audible alarm if bulb out). Connect to ground for addition of any consumer on ways 4 and 6.

Way 8: Vehicle fog lamp power supply if vehicle pre-fitted with trailer coupling ("VR2" option). Remove pin 8 on the coupling side if consumer added to way 10.

WAY 8 CONNECTION DIAGRAM



- 1: Original connection diagram with "VR2" option
- 2: Connection diagram with "VR2" option and addition of a consumer on way 10

Currents available on the trailer coupling connector:

- Vehicle with coupling: Each of these connections must only be used to control one single automotive relay; no power available.
- Vehicle without coupling: A consumer with the same power as the trailer bulbs can be connected to each of the connections.

OPEL MOVANO (X62)
123 – DAYTIME RUNNING LIGHTS



Option T3W

Daytime running lights increase visibility of the vehicle during daylight.

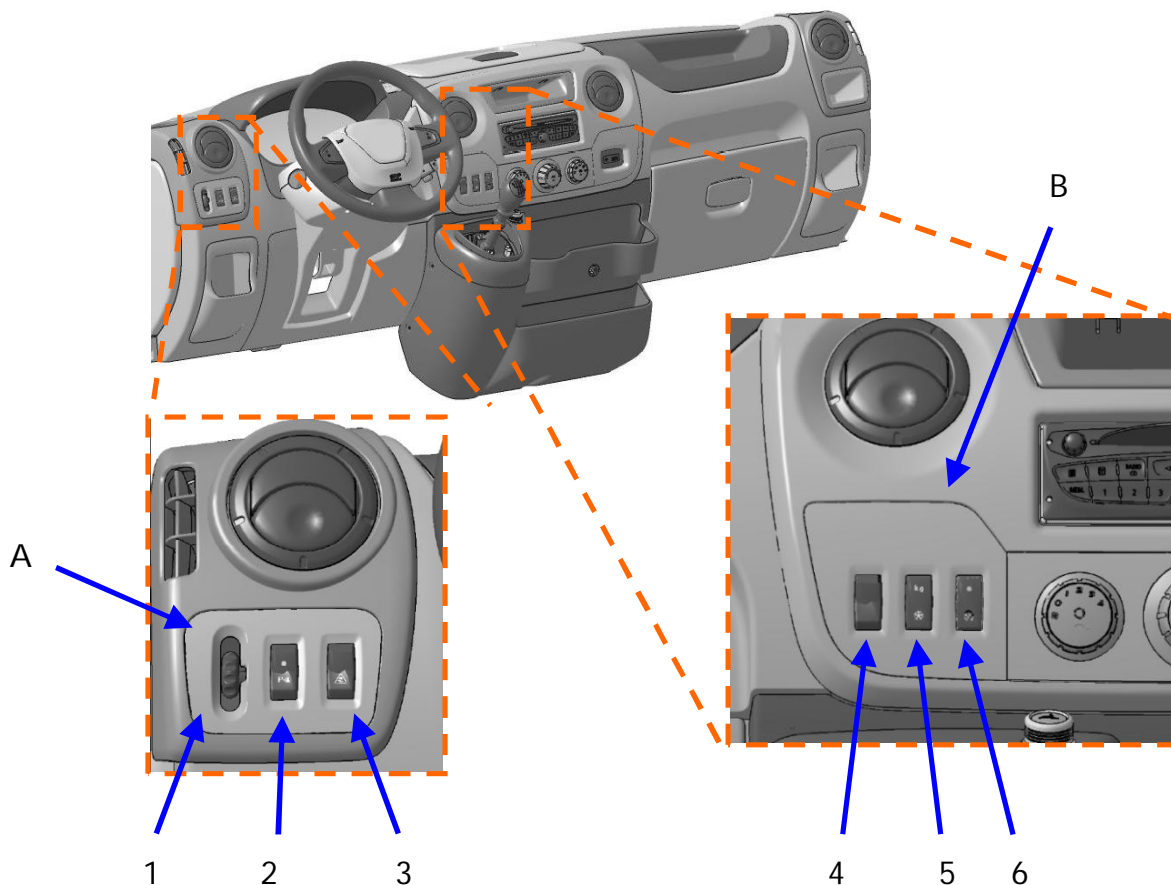
The running lights option automatically switches on the dipped beam lights when the vehicle starts up, depending on legislation in the country where the vehicle is sold.

When the ignition is on, the headlights come on and instrument illumination is subdued.
The daytime running lights switch off when the ignition is switched off.

The running lights function can be activated or deactivated using the Opel diagnostics tool (TECH2) in the Opel dealer network.

Before working on the vehicle, refer to chapter 107 "Electrical Connections.

Depending on the version, one or more spaces for switches may be provided on the side part and/or the centre left of the dashboard.



A:	Left side switch support (*)
1:	Electric headlamp height adjustment
2:	ESP dynamic driving control
3:	Parking assistance
B:	Centre switch support (*/**)
4:	Cruise control-speed limiter
5:	Snow position for MTA transmission Stop/Start Interrupter
6:	Accelerated idle Conduct economic mode

(*) Presence and position dependent on version

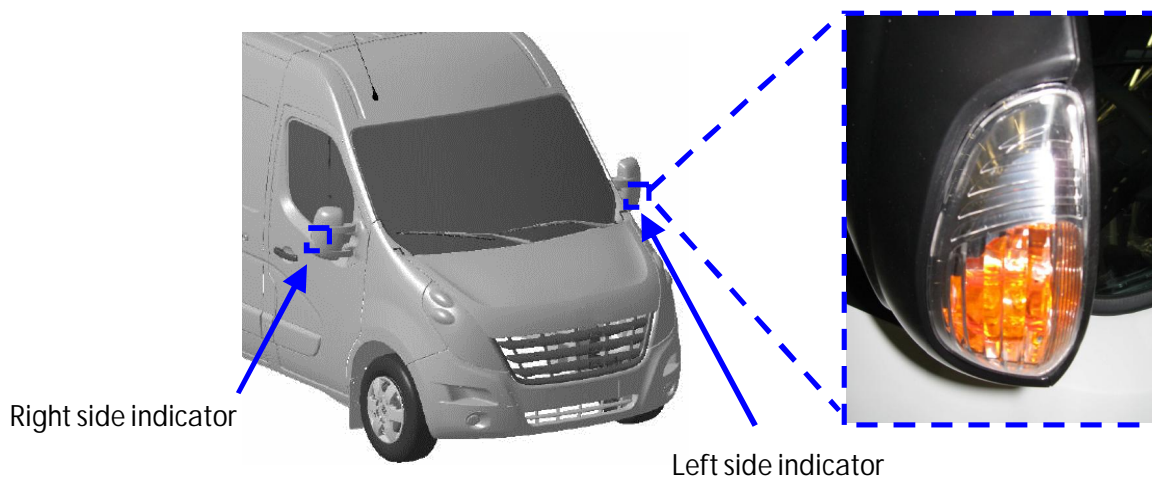
(**) Presence of a storage box, dependent on version

The side indicators are located at the bottom of the door mirrors.

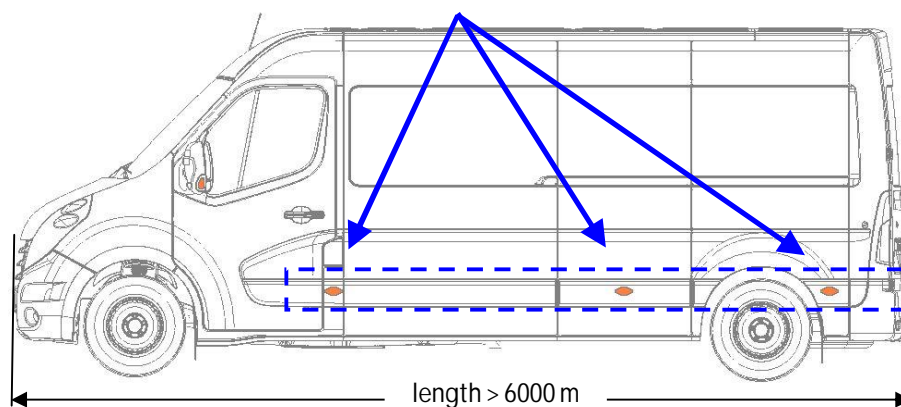
Vehicles (shorter than 6 metres) are fitted with side indicators with 5 W bulbs as standard in the side mirrors.

When the regulations so require, vehicles that are longer than 6 metres must use 16 W bulbs in their side indicators. The "UZB" option meets this requirement. For more information, see also Chapter 36.

SIDE INDICATORS



SIDE MARKER LAMPS



Important: The indicators are not controlled by a flashing light unit but by the Body Control Unit (UCH).

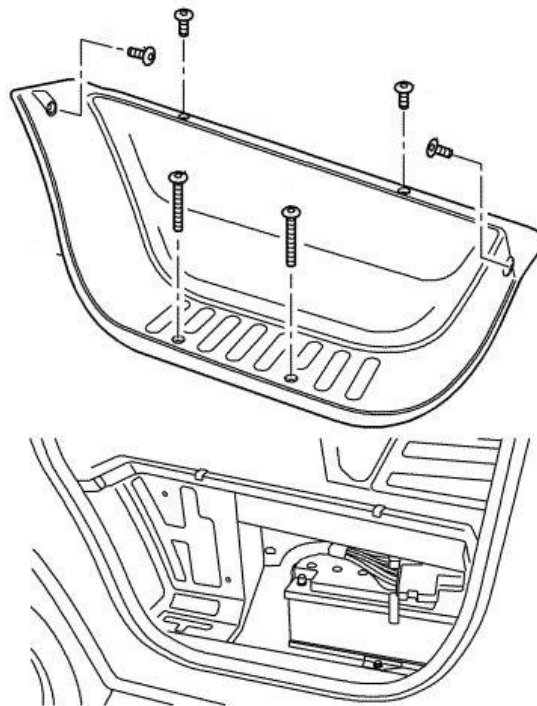
No change from 5 W to 16 W indicators or vice versa may be made without reconfiguring the Body Control Unit. The 5W and 16W side indicators each have a specific configuration in the UCH.

It is prohibited to fit indicators with more than 16 W power on the door mirrors.

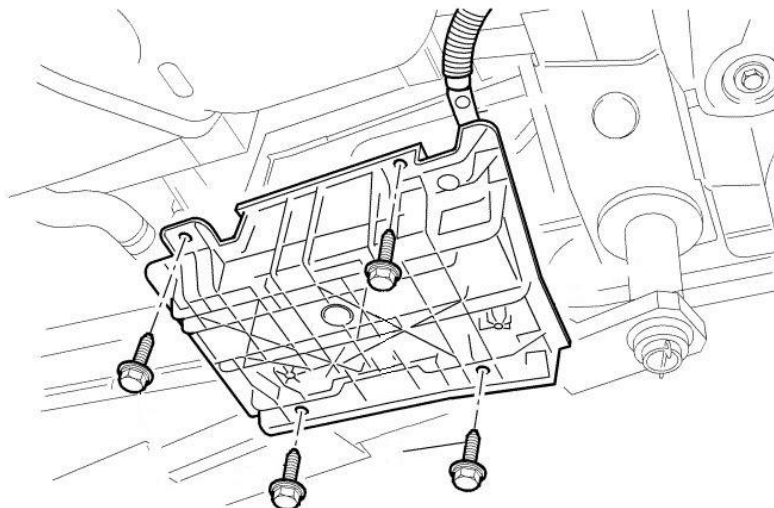
1. The standard starter battery

The standard battery is located under the left side of the driver's cab. The covering of the step must remove to get to the battery

BATTERY BEHIND LEFT STEPBOARD



The battery box is screwed to the floor and can also extend completely down. Before that, the battery should be removed.



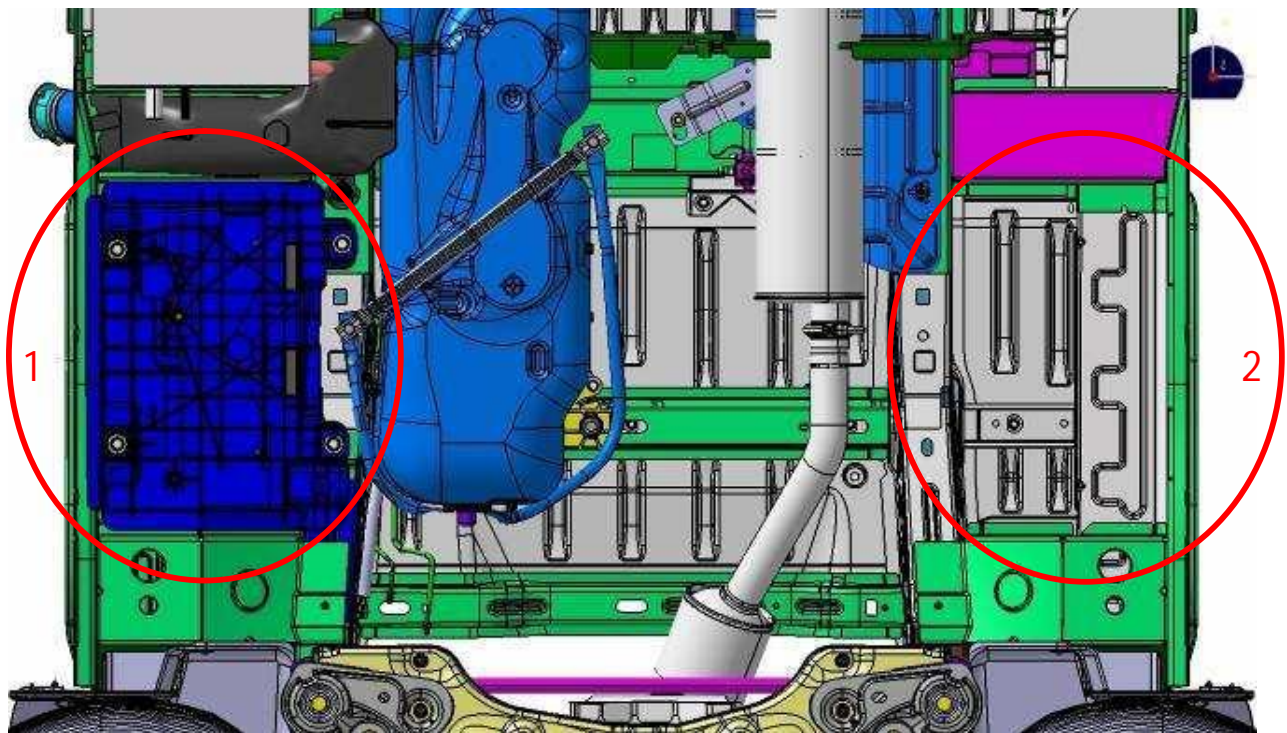
2. The additional battery

A special battery tray should be used according to the size of the battery. It is to be attached under the body. We recommend that you use the mountings of the main battery tray on the left-hand side as your model. The battery will therefore be fitted from underneath the body.

For installation of an additional battery, space is provided under the right-hand cab door sill, visible in zone 2 in the drawing below.

The right-hand door sill bodywork is different from that of the left-hand sill (see drawing below).

VIEW FROM BELOW: DIFFERENCE BETWEEN LEFT AND RIGHT-HAND DOOR SILLS

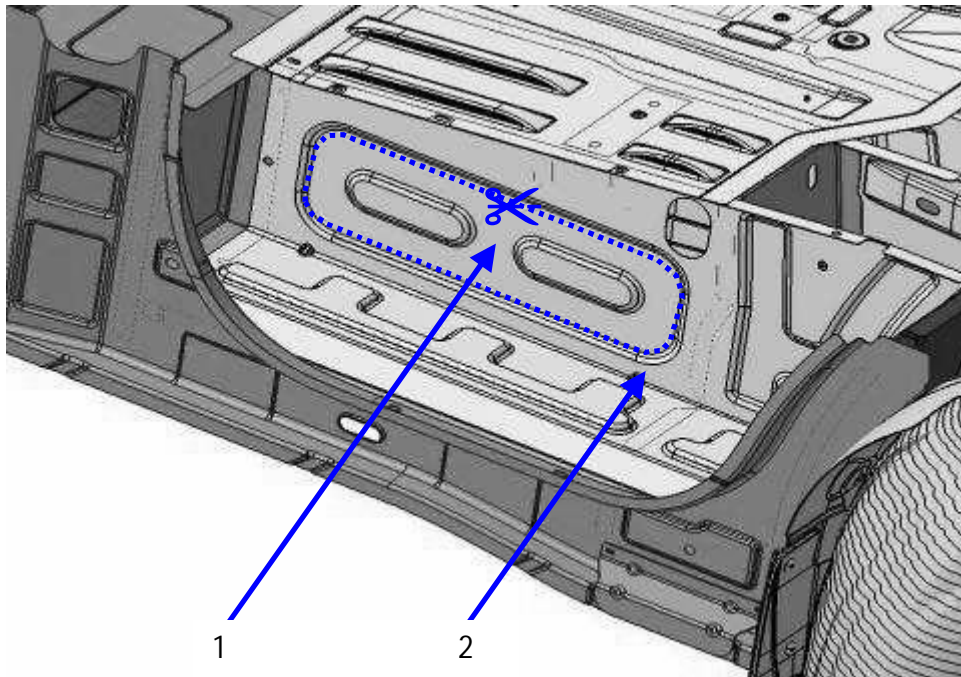


Left hand

Right hand

- 1 Location of the original battery in the cab left-hand door sill with the battery bracket (in dark blue)
- 2 Location of the additional battery in the cab right-hand door sill

RIGHT HAND DOOR SILL



- 1 Zone to be cut out from the stamped part for access to the additional battery terminals in the right-hand cab side sill
- 2 Radius required regardless of the cut-out

The side sill panel may be cut out to allow access to the positive and negative terminals (see 1).

The maximum authorized cut-out must not exceed the limit of the stamped part. The cut-out will be done with the radii in the corners (see 2).

The door sill cut-out must be sealed (water, air, noise).

After cutting out the side sill, the filings or shavings must be vacuumed and a corrosion inhibitor used, referring to the "Specific Corrosion Guidelines".

To install the additional battery and its mountings, please refer to the "Battery" sheet.

For battery coupling, please refer to the "Battery coupling" sheet.

N.B.:

The additional battery must be disconnected during installation.

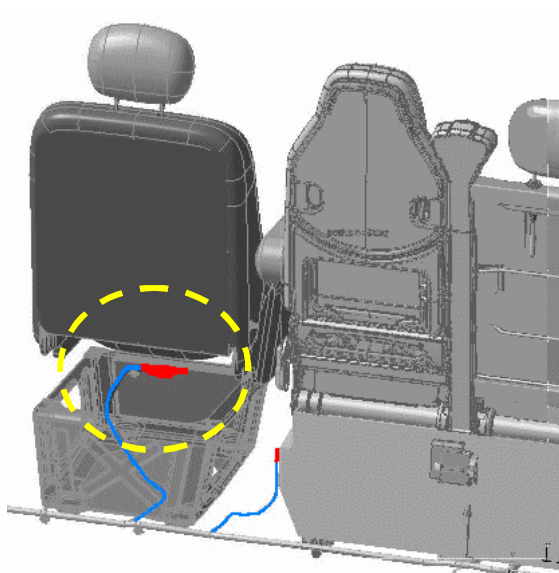
Warning:

The batteries may not be directly coupled in parallel.

The vehicle comes with an audible seat belt warning as standard for the driver's seat. If the driver's seat is changed, this feature can be replaced or potentially neutralized.

The seat belt stalk has a mechanical contact switch that reads the presence of the seat belt buckle. This contact switch is directly connected to the airbag ECU. The contact connections are on the 6-way connector under the seat.

POSITION OF THE DRIVER'S SEAT CONNECTOR



Way number	Assignment
Way 1 (60DU)	Seat belt buckle connection (wire cross section 0.5 mm ²)
Way 2 (60DV)	Seat belt buckle connection (wire cross section 0.5 mm ²)
Way 3 (SP8)	Protected +12 V circuit distribution supply for heated seat (wire cross section 1 mm ²)
Way 4 (SP8)	Protected +12 V circuit distribution supply for heated seat (wire cross section 2 mm ²)
Way 5 (MAM)	Ground (wire cross section 0.5 mm ²)
Way 6 (LPG)	Protected left-hand side light supply (wire cross section 0.75 mm ²)

To activate the audible seat belt warning, a stalk fitted with an opening contact switch should be used, which should be connected to the connector using ways 1 and 2 of the 6-way connector.

The presence of the seat belt is detected when the contact switch is open.

To deactivate the audible seat belt warning, ways 1 and 2 of the 6-way connector need to be connected by a shunt.

Comment:

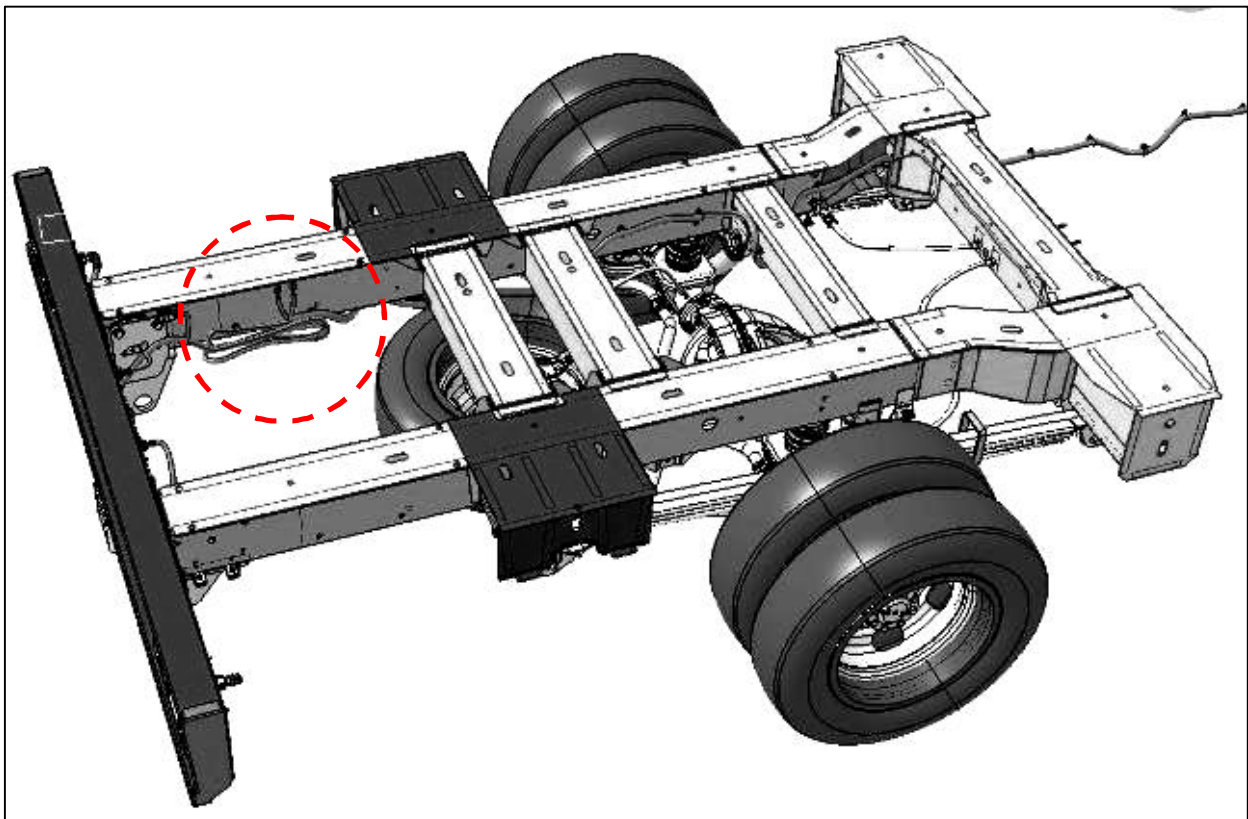
In cases where the audible seat belt warning is deactivated, it is advisable to inform the end customer, for example through the instruction manual and/or with a sticker.

The “UNF” option provides special rear wiring that is 650 mm longer, which is necessary for extension of the rear overhang. This excess length is wound on the chassis.

The additional length enables extension of the overhang depending on the version:

- Platform cab: 1,690 mm
- Single wheel chassis cab: 1,500 mm
- Twin wheel chassis cab: 950 mm


COIL LOCATION ON THE CHASSIS



Some ECU settings can be changed using the diagnostics tool (TECH2) in the Opel dealer network.

Prior to any modification, the ECU in question must be fully reconfigured.

After modification, the vehicle must still comply with the legislation and standards in force in the country of sale.

ECU	Modifiable function	Settings that can be modified using CLIP
Passenger Compartment Control Unit (UCH)	Vehicle locking and unlocking Side doors Rear doors Boot opening 	<ul style="list-style-type: none"> • 2-button key • 3-button key (boot = rear doors - PAR) • 3-button key (boot = side PL + rear doors PAR)
	Front left door	<ul style="list-style-type: none"> • Absent • Present
	Front right door	<ul style="list-style-type: none"> • Absent • Present
	Left side door	<ul style="list-style-type: none"> • Absent • Swing door • Sliding door
	Right side door	<ul style="list-style-type: none"> • Absent • Swing door • Sliding door
	Rear door(s)	<ul style="list-style-type: none"> • Absent • Swing doors • Tailgate
	Automatic locking of doors after 2 minutes of no activity	<ul style="list-style-type: none"> • Active • Inactive
	Deadlocking (internal and external handles inactive) (In line with legislation)	<ul style="list-style-type: none"> • Present • Not present
	Front fog lamp	<ul style="list-style-type: none"> • With • Without
	Vehicle light cut-off (In line with legislation/depending on country)	<ul style="list-style-type: none"> • Lights go out when the engine stops and when the doors are opened. • Lights go out when the engine stops.
	Rain and light sensor, function presence	<ul style="list-style-type: none"> • With • Without
	Automatic headlight illumination and rain sensor.	<ul style="list-style-type: none"> • Function active (as standard) • Function inactive

ECU	Modifiable function	Settings that can be modified using CLIP
Passenger Compartment Control Unit (UCH)	Rain/light sensor detection threshold: - Northern countries and Great Britain - Other countries (In line with legislation in the country of sale)	<ul style="list-style-type: none"> • North • South
	Emergency Brake Assist with or without warning (In line with legislation)	<ul style="list-style-type: none"> • No light • Light
	Retrofit alarm	<ul style="list-style-type: none"> • With • Without
Dashboard	Consumption unit (ADAC) (In line with legislation)	<ul style="list-style-type: none"> • Litres/100 kilometres • Miles/Gallon • Kilometres/1 litre
	Odometer unit (In line with legislation)	<ul style="list-style-type: none"> • Kilometres • Miles
	Seat belt unfastened warning	<ul style="list-style-type: none"> • Active • Inactive
	Language (dashboard display)	<ul style="list-style-type: none"> • By country
	Vehicle service range	<ul style="list-style-type: none"> • Without • Configured • Free
	Overspeed warning signal (In line with legislation/depending on country)	<ul style="list-style-type: none"> • Active • Inactive
Parking assistance	Beep volume	<ul style="list-style-type: none"> • None • Low • Medium • High • Maximum
	Tone adjustment	<ul style="list-style-type: none"> • 800 Hz • 1,000 Hz • 2,000 Hz
Engine	Accelerated idle	<ul style="list-style-type: none"> • From 1,000 to 2,000 rpm • in 100 rpm increments
ABS/ESP	Brake light illumination if ESP operating (In line with legislation)	<ul style="list-style-type: none"> • Active • Inactive

ECU	Modifiable function	Settings that can be modified using CLIP
Airbags	Passenger-side front airbag	<ul style="list-style-type: none"> • Active • Inactive
	Side airbag for driver	<ul style="list-style-type: none"> • Active • Inactive
	Passenger-side side airbag	<ul style="list-style-type: none"> • Active • Inactive
	Driver's front pretensioner	<ul style="list-style-type: none"> • Active • Inactive
	Driver's front pretensioner	<ul style="list-style-type: none"> • Active • Inactive
	Driver's 2 nd row pretensioner	<ul style="list-style-type: none"> • Active • Inactive
	Passenger's 2 nd row pretensioner	<ul style="list-style-type: none"> • Active • Inactive

For some of the functions, please refer to the relevant sheet.

Before working on the vehicle, refer to chapter 107 "Electrical Connections".

1. Energy recovery conditions

The progressive ground on connectors is a delayed analogue signal. Under no circumstances may this signal be relayed.

Excess consumption of no more than 2 A (24 W) may be taken from the rear zone and double cab lighting.

No excess consumption is feasible for front and right-hand side courtesy lights (sliding side door). Follow the procedure for consumption greater than 2 A.

If consumption is greater than 2 A (24 W) for the rear and double cab lighting and on the front or right-hand side lighting:

- the delayed power supply should control a relay which will control another power supply.
- a specific ground should be used (the progressive ground will no longer be usable).

If the open door information is required, a panel switch should be added.

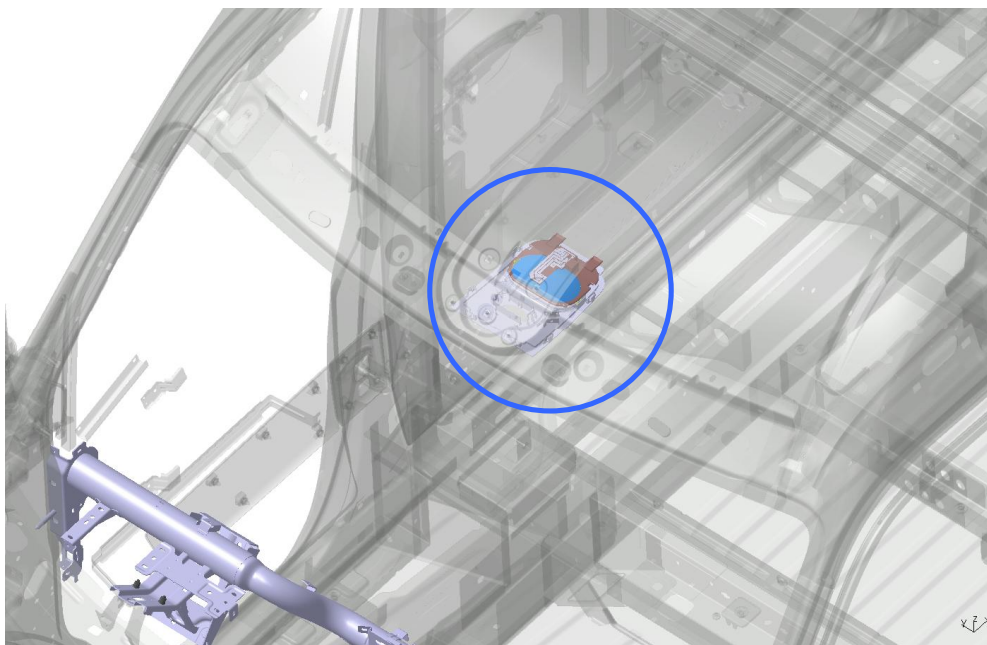
N.B.:

For wires with a cross section of 0.5 mm², it is possible to bypass these wires by using a crimp adaptor.

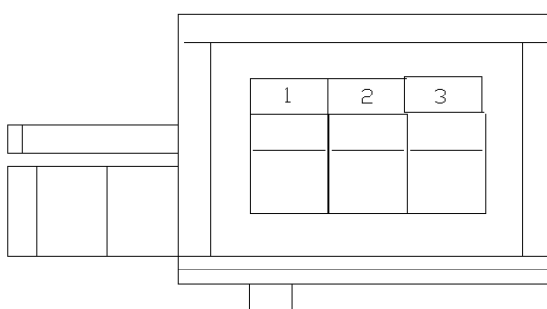
However, for wires with a cross section of 0.35 mm², use of the crimp adaptor is very delicate and it is strongly recommended to recover this information on the roof connector.

2. Location of lighting and connector way assignments

DRIVER'S SEAT LIGHTING

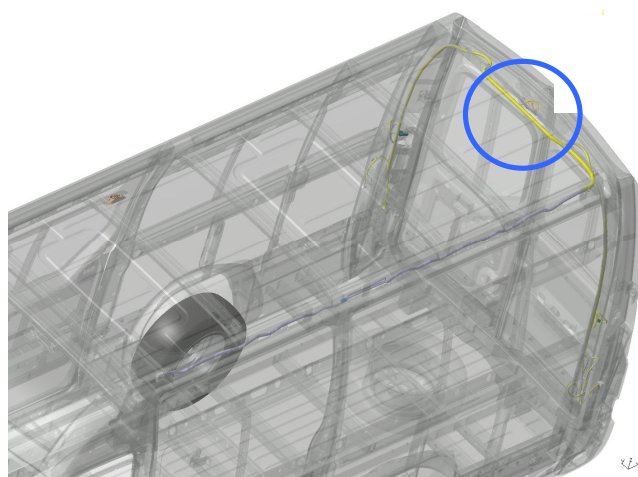


ASSIGNMENT OF CONNECTOR WAYS



Way number	Assignment
Way 1 (BPT2)	Delayed +12 V power supply (wire cross section 0.5 mm ²)
Way 2 (13L)	Progressive active ground when door opens and digressive when door closes or +APC (wire cross section 0.5 mm ²)
Way 3 (NAM)	Ground (wire cross section 0.5 mm ²)

REAR PANEL VAN LIGHTING AND DOUBLE CAB LIGHTING

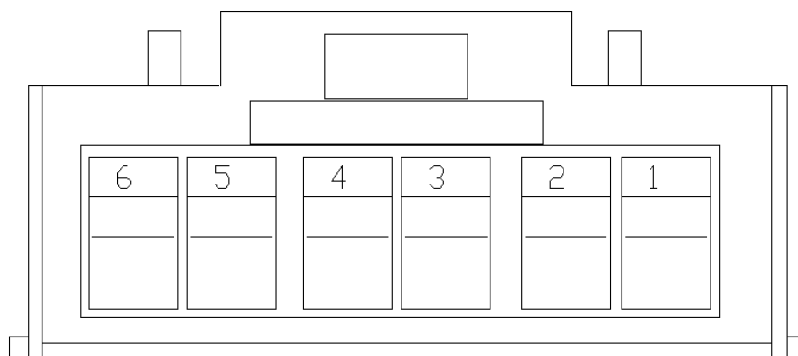


Van



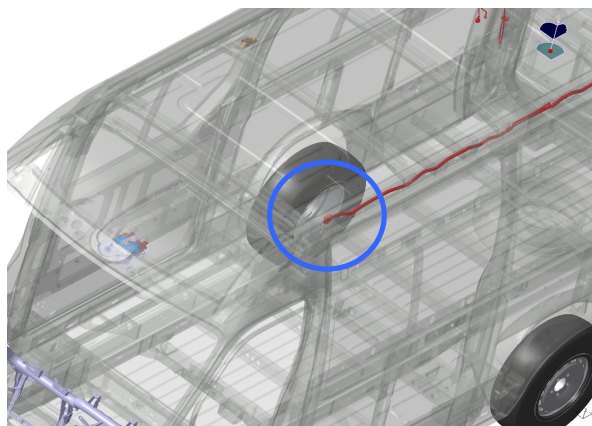
Chassis Cab

ASSIGNMENT OF CONNECTOR WAYS

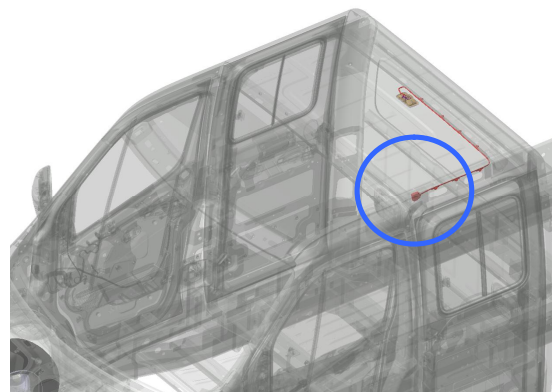


Way number	Assignment
Way 2 (13M)	Progressive active ground when door opens and digressive when door closes or +APC (wire cross section 0.35 mm ²)
Way 3 (MG)	Permanent ground (wire cross section 0.35 mm ²)
Way 4 (BPT2)	Delayed +12 V power supply (wire cross section 0.35 mm ²)

ROOF CONNECTOR



Van



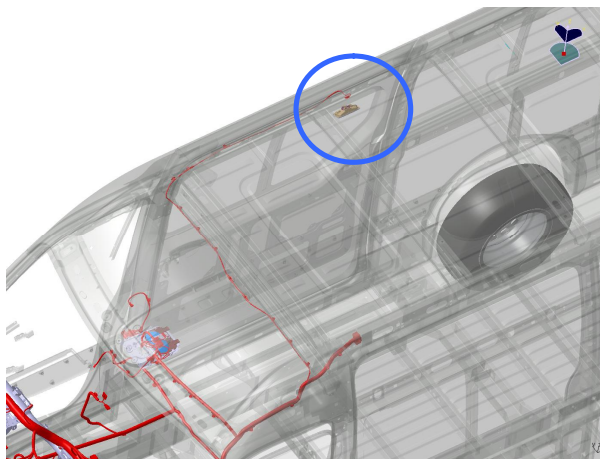
Chassis Cab

ASSIGNMENT OF CONNECTOR WAYS

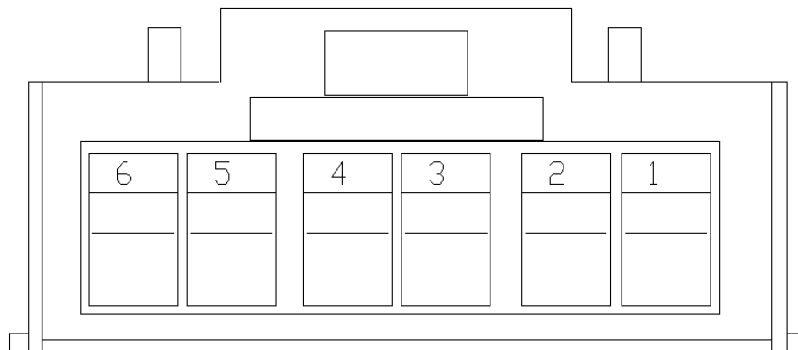
A	1	2	3	4	5	6	7	8	9	10	11	12
B	1	2	3	4	5	6	7	8	9	10	11	12
C	1	2	3	4	5	6	7	8	9	10	11	12

Way number	Assignment
Way C5 (13M)	Progressive active ground when door opens and digressive when door closes or +APC (wire cross section 0.35 mm ²)
Way B7 (BPT2)	Delayed +12 V power supply (wire cross section 0.35 mm ²)

RIGHT-HAND SIDE DOOR LIGHTING



ASSIGNMENT OF CONNECTOR WAYS



Way number	Assignment
Way 2 (13M)	Progressive active ground when door opens and digressive when door closes or +APC (wire cross section 0.35 mm ²)
Way 3 (NAM)	Permanent ground (wire cross section 0.35 mm ²)
Way 4 (BPT2)	Delayed +12 V power supply (wire cross section 0.35 mm ²)

Warning:

The wires cannot be retrieved in the connector as there is no double exit.

The first-fit electric plug for the coupling and the one available from after-sales are 13-pin type. Assignment of the pins is standardised.

Electrical switches are built into the plug. They are activated depending on the opening or closing of the coupling plug hood.

The SW1 switch indicates the presence or absence of the trailer to the vehicle ECUs.

The SW2 switch enables the vehicle ECUs to automatically disconnect the rear fog lamp.

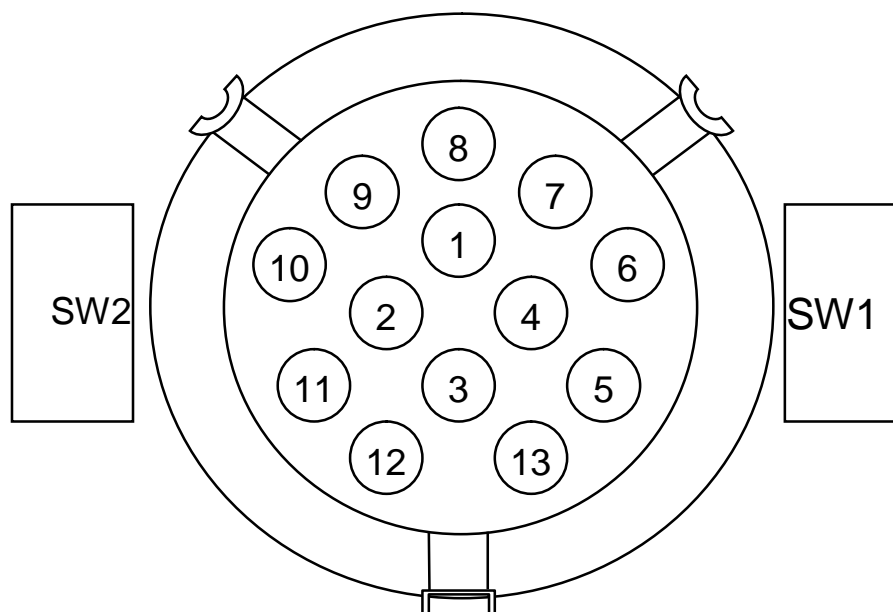
The coupling wiring can be connected to the vehicle in three ways.

1. On panel vans with coupling equipment pre-fitted or the "VR2" option: special 10-way intermediate connector fitted in the rear left pillar.
The trailer coupling wiring is available in the Opel dealer network under part number 93168508 for vehicles fitted with a rear parking sensor or under part number 93168511 for vehicles not fitted with a rear parking sensor.
2. On panel vans without coupling equipment pre-fitted or the "VR2" option.
Pick-offs need to be created at the vehicle's tail light location. Please refer to the "Lights Information" sheet.
3. On chassis cabs and platform cabs: special 10-way intermediate connector on the rear left of the chassis.
The trailer coupling wiring is available in the Opel dealer network under part number 241570005R.

Comment:

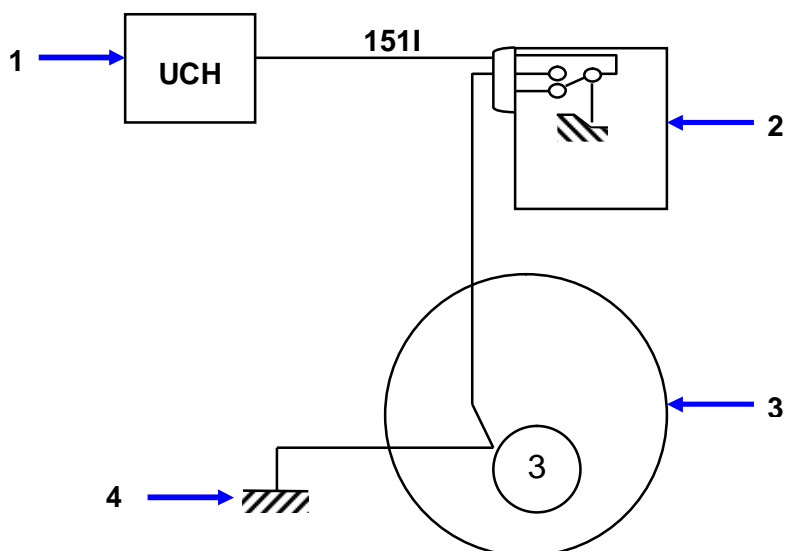
Connecting the coupling plug maintains the service monitoring operation of the vehicle's indicators and also allows the rear parking sensor to be disabled.

ASSIGNMENT OF CONNECTOR TRACKS



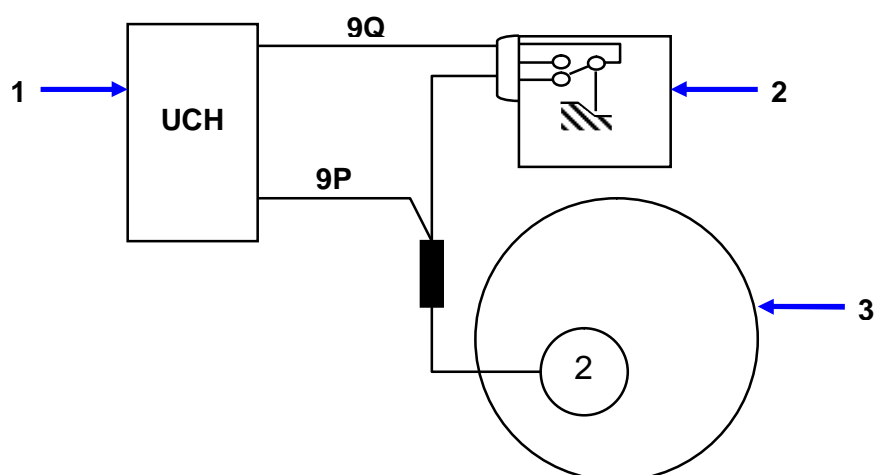
Way number	Assignment
Way 1	Left turn signal light
Way 2	Rear fog lamp
Way 3	Ground (10 A max)
Way 4	Right turn signal light
Way 5	Right side light
Way 6	Brake lights
Way 7	Left side light
Way 8	Reversing lamp
Way 9	Not wired
Way 10	Not wired
Way 11	Not wired
Way 12	Not wired
Way 13	Ground (10 A max)
SW1	Trailer presence
SW1	Rear fog lamp disconnection

SW1 ELECTRICAL DIAGRAM



- 1: Passenger Compartment Control Unit (UCH)
- 2: SW1 switch
- 3: Coupling plug, track 3
- 4: Ground

SW2 ELECTRICAL DIAGRAM



- 1: Passenger Compartment Control Unit (UCH)
- 2: SW2 switch
- 3: Coupling plug, track 2

1 – Installation or modification of front door panel switches (Front wheel drive version with "Easytronic" automatic robotized gearbox).

Before working on the vehicle, refer to chapter 107 "Electrical Connections".

On front wheel drive vehicles, the presence of an automatic robotized, or "Easytronic", gearbox imposes the presence of a front driver door. A door switch must provide information on whether the door is open or closed to the UCH (cabin central control unit).

With regard to the door switch (construction of a front door on a chassis cowl version or modification of the front door on the other versions), the recommendations outlined in this chapter must be complied with.

Please note that on mass production vehicles fitted with a front door, the switch is integrated in the latch.

Introduction:

For front wheel drive versions, an automatic robotized gearbox is composed of the following elements:

- Manual gearbox,
- Electro-hydraulic gear selection activator,
- ECU to manage the transmission modes and gear changes,
- Electric pump to generate the hydraulic pressure required by the actuators.

To have an immediate service imperceptible to the driver, the hydraulic reserve is placed under pressure before switching on. When the vehicle is at a stop, opening the front driver door activates the electric pump if the reserve pressure is insufficient.

A significant amount of safety features, both for the system and users, are also planned.

In this context, so that vehicles on chassis cowl can be constructed or for any modification to the mass production switches (latch), the recommendation outlined below must be applied.

Switch-related constraints:

The door switch on vehicles fitted with an automatic robotized gearbox activates an audible signal to alert the driver under the following conditions:

- A gear is engaged and the engine is running and the driver does not have his/her foot on the brake and the door is open.
- The risk identified is that the driver leaves the vehicle, therefore releasing the brake whilst a gear is engaged → the vehicle therefore starts crawling (it advances at low speed).

The absence of an audible signal would therefore hamper safety.

This problem concerns transformations which affect the switch function (latch on mass production vehicles) or chassis cowl versions which have no front door on delivery.

Without knowing the type of transformation made, Opel cannot provide detailed mechanical installation recommendations. Nevertheless, the adapter must comply with the following technical recommendations:

Switch installation and associated transformation:

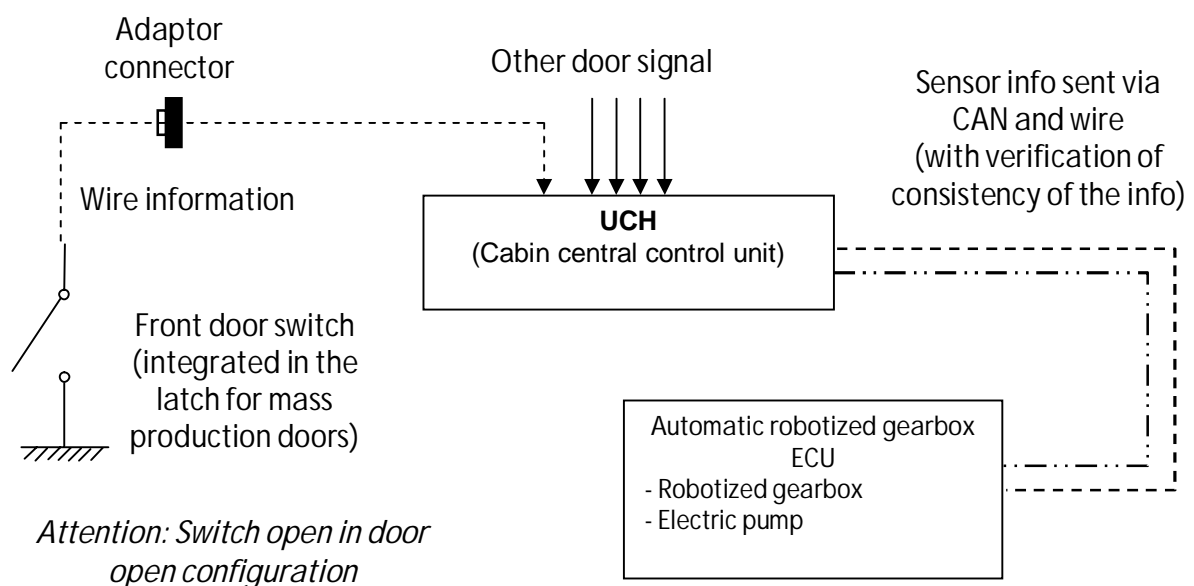
The door switch information must be associated with the automatic robotized gearbox for the driver door.

It must not be associated with the rear cabin doors so as to avoid the activation of the electric pump, causing:

- Noise interference, due to the pump during, the numerous openings and closures of the rear doors (incompatible for example with the relaxing use of the camper van).
- The battery to discharge which may result in it being impossible to start the vehicle.

For camper vans with integral cells which do not have a front door on the driver's side, the automatic robotized gearbox is strongly discouraged.

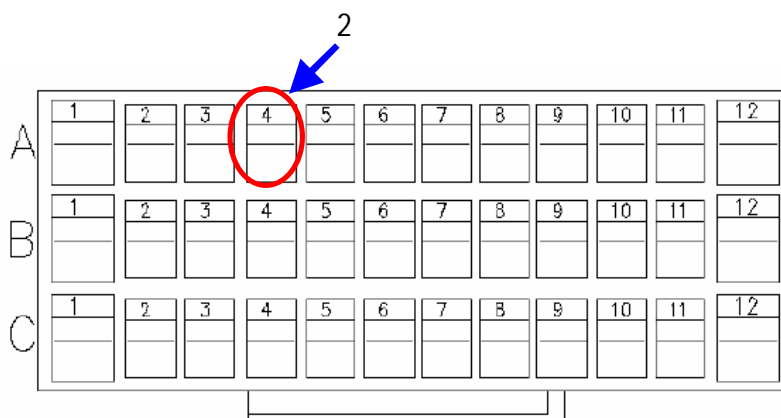
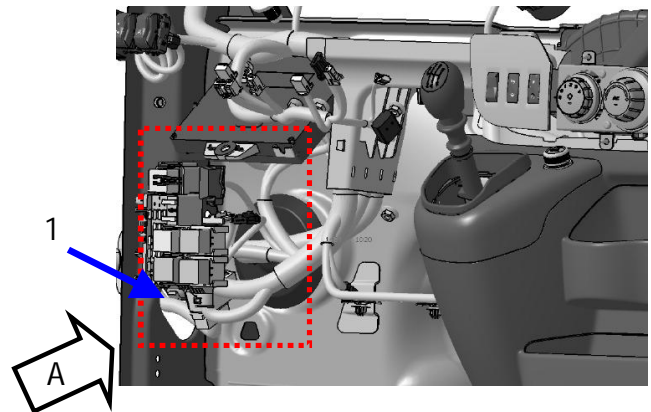
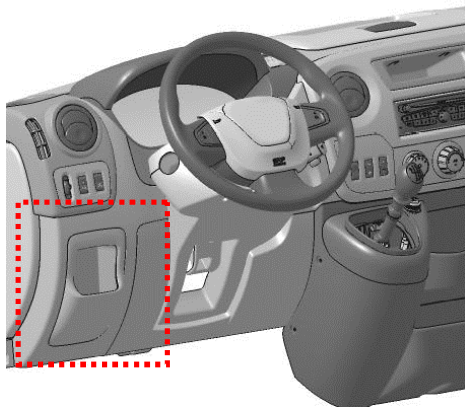
For information, the switches on the front passenger, side and rear doors of chassis vehicles are linked with the UCH but not connected to the automatic robotized gearbox.



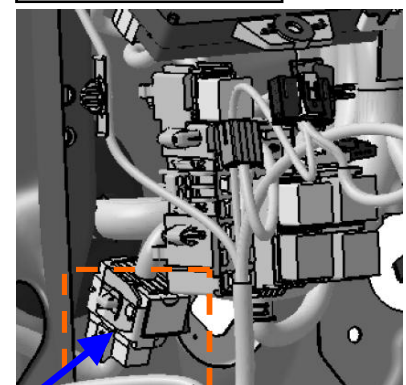
The instrument panel buzzer uses the wire door switch information or CAN information (information redundancy, for safety).

The electric pump only uses the wire door switch information (as it is the only information available with the power off).

The connection may be made at the adaptor connector (front door latch ⇔ UCH) located under the instrument panel or on the front door wiring (depending on the characteristics of the transformation).



SideView



- 1 : Adaptor connector: front door latch ⇔ UCH
2 : Door switch signal: channel A 4

It will be necessary to reconfigure the UCH in the Opel network to indicate the presence of the door to it (using the CLIP diagnostics tool).

For information, there are five parameters to signal the presence or absence of doors to the UCH:

- Front left door: Absent or present
- Front right door: Absent or present
- Left side door: sliding door, hinged door or no door
- Right side door: sliding door, hinged door or no door
- Rear door: Absent or present

Switch characteristics:

The switch must be:

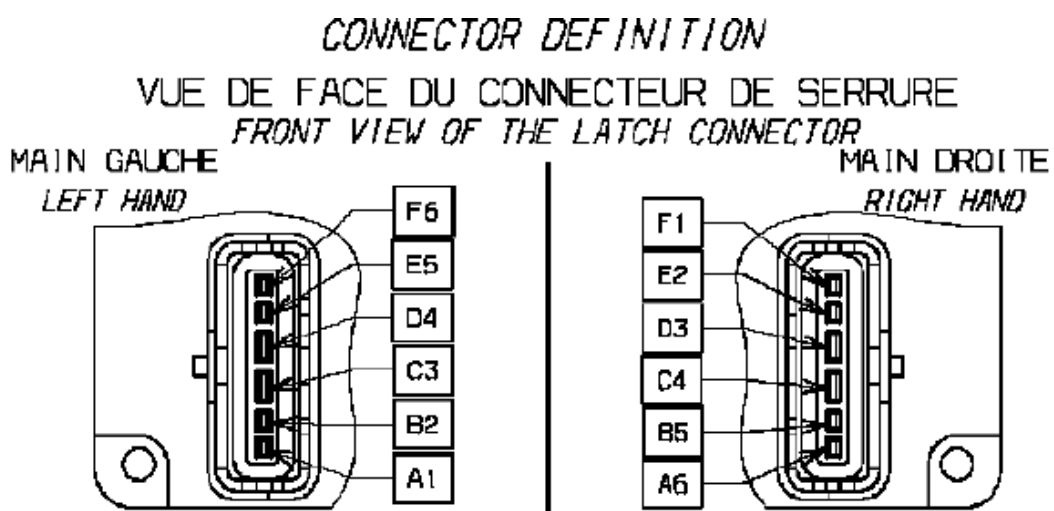
- "Open" in "driver door open" position



- "Closed" in "door closed" position

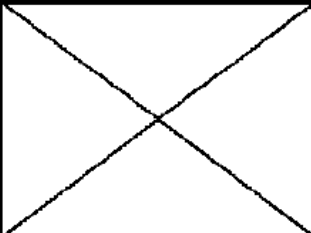


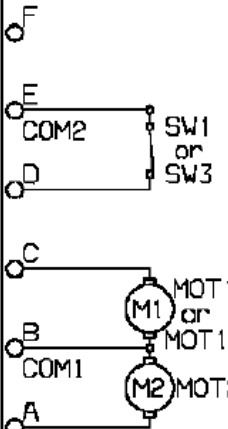


On mass production vehicles fitted with a front door, the switch is integrated in the latch:



Letters localize the channels on the latch connector

Figures localize the channels on the harness

			MOTORS PATTERNS									SWITCHES PATTERNS				ELECTRICAL CIRCUITS
			MOTOR	ACTIONS (* means no action)								LATCH STATUS				
				SUPER-LOCK M1	*	SET	RELEASE	SET	RELEASE	*	*	*	SW3			
			LOCK	LOCK	*	UNLOCK	LOCK	*	UNLOCK	*	*	DOOR OPENED	DOOR CLOSED			
			VEHICLE HARNESS	LATCH PIN												
LH	RH															
6	1	F														
5	2	E														
4	3	D														
3	4	C			+	-	-	+	+	-	+	-				
2	5	B			-	-	+	-	+	+	+	-				
1	6	A			-	+	-	+	-	+	+	-				

Procedure to verify correct operation after transformation:

The following procedure is used to check the correct operation of the automatic robotized gearbox and therefore that of the driver door switch assembly.

The service must be verified directly using:

- Triggering of the buzzer noise.
- The electric measurement linked to starting the electric pump.
- The buzzer test alone, using both the CAN info and the wire info, is not sufficient to guarantee that the activation of the electric pump on opening the door with the power off will operate correctly.
- Verification of the activation of the electric pump.

Initial vehicle configuration required:

- The vehicle must be maintained in the following condition: Driver door closed and ignition key permanently cut for at least 12 hours, to allow the hydraulic fluid of the gearbox control to drop in pressure, which will ensure the electric pump is put into action during the test.
- A battery current measurement instrument must be installed and accessible outside the vehicle to read the current when the driver door is opened (hook-on ammeter or ammeter).

Operator action:

- Open the driver door.

Check:

- During activation of the electric pump (2 to 10 seconds), check that a consumed battery current greater than 17A is obtained (for information, activation of electric pump emits a characteristic noise during operation).

Verification of the buzzer operation:

Initial vehicle configuration required: Engine running, foot on the brake, first gear engaged and driver door open.

Operator action: Take the foot of the brake.

Attention, for safety it is recommended that the parking brake be fully engaged, guaranteeing the safety of this test; the parking brake has no impact on the verification.

Check: Triggering of the buzzer.

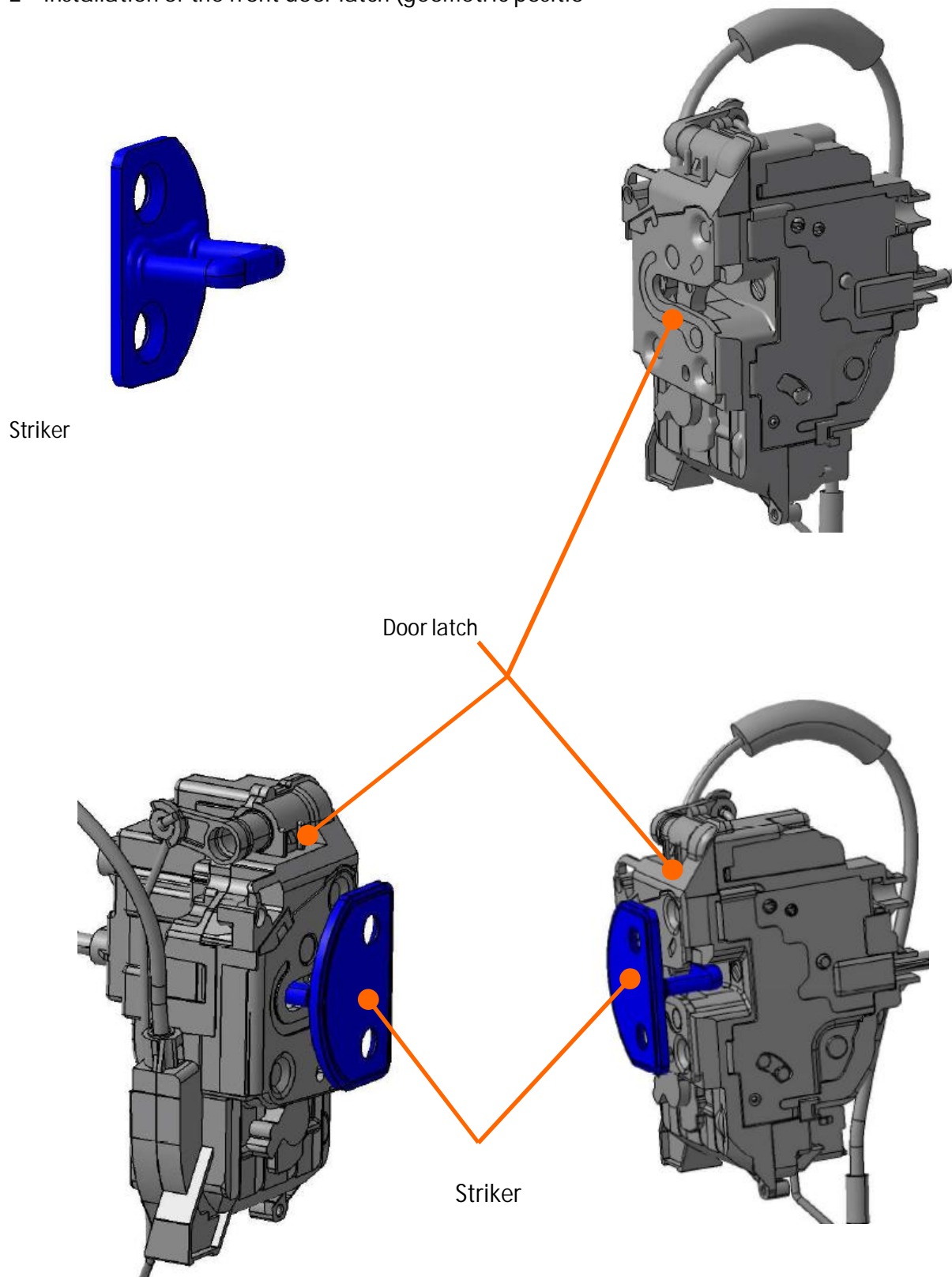
Inspection operation traceability:

Recourse to the panel switch is a safety essential, as is the inspection of the global operation of the automatic robotized gearbox as described.

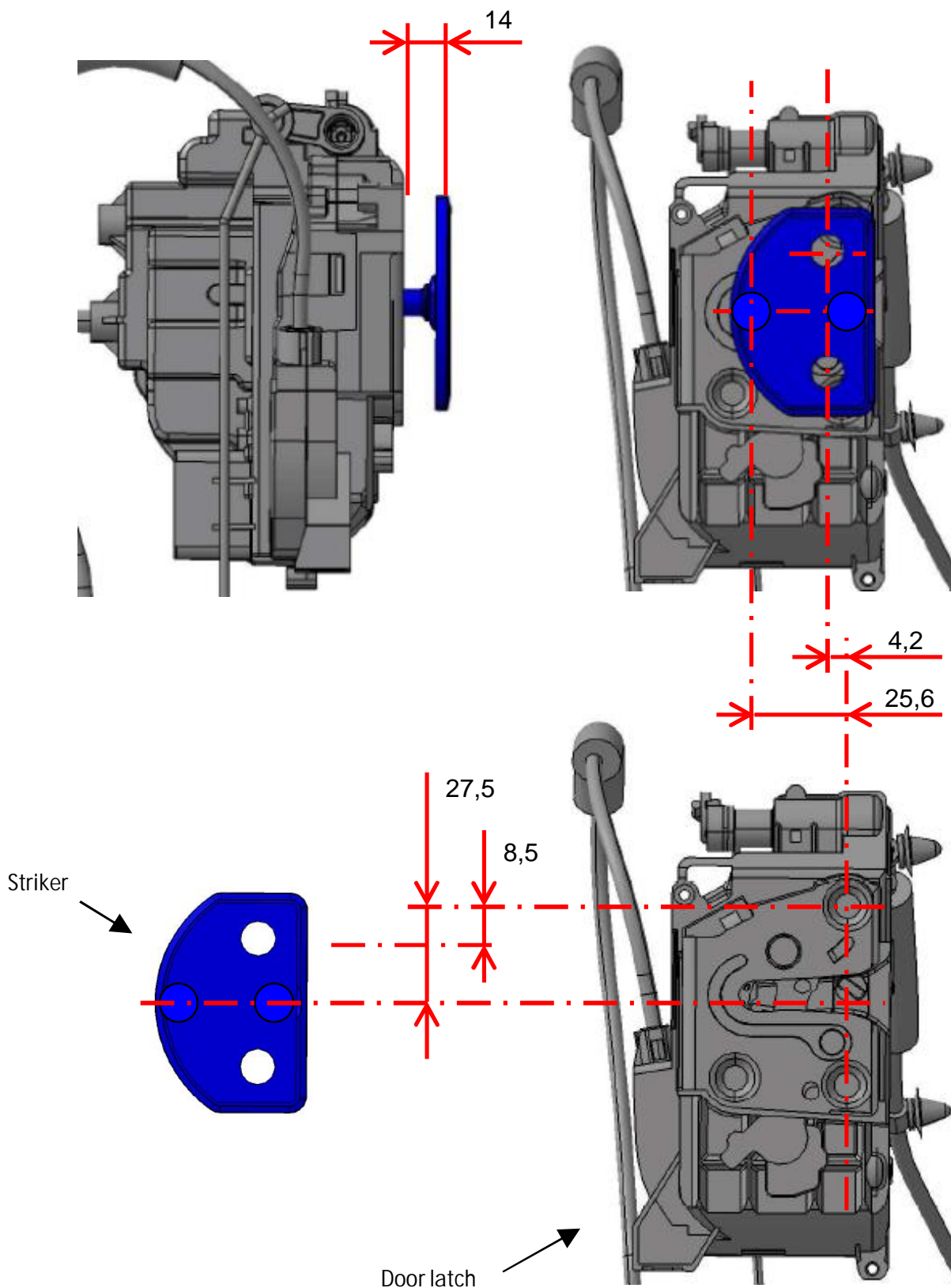
The successful implementation of these inspections must therefore be recorded in a register or other medium and archived.

This is the sole responsibility of the final transformer.

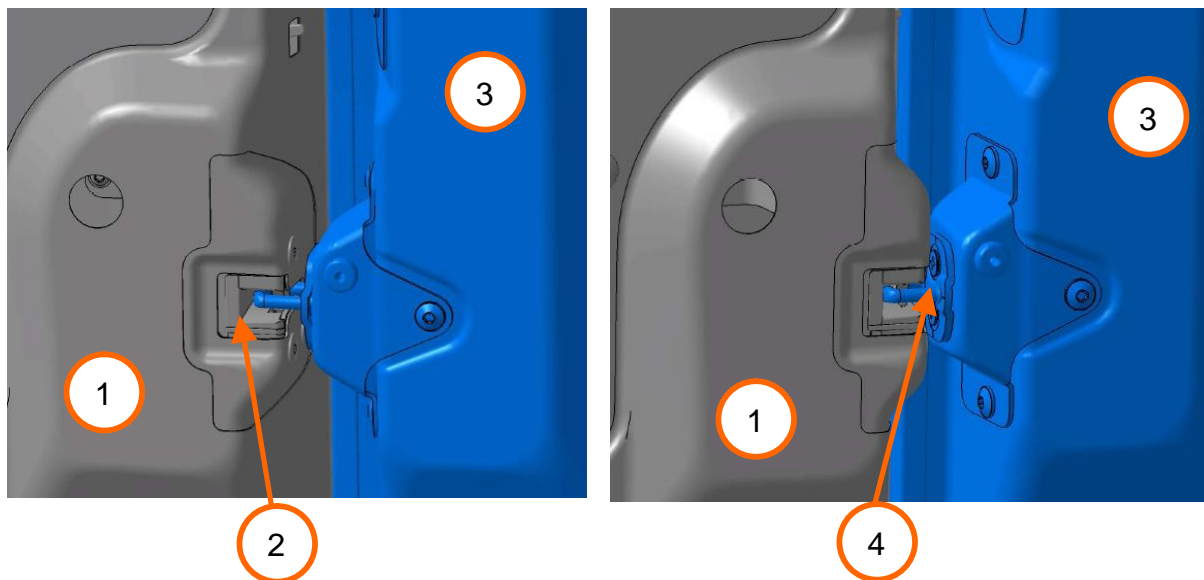
2 – Installation of the front door latch (geometric position)



Important dimensions to be respected for correct operation of the assembly

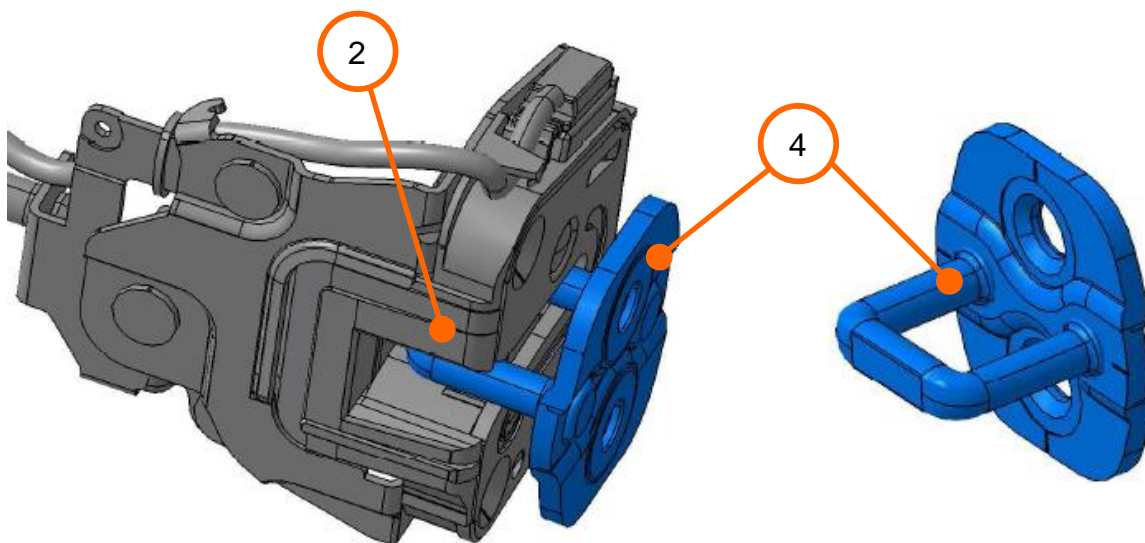


3 – Installation of the sliding side or rear door latch

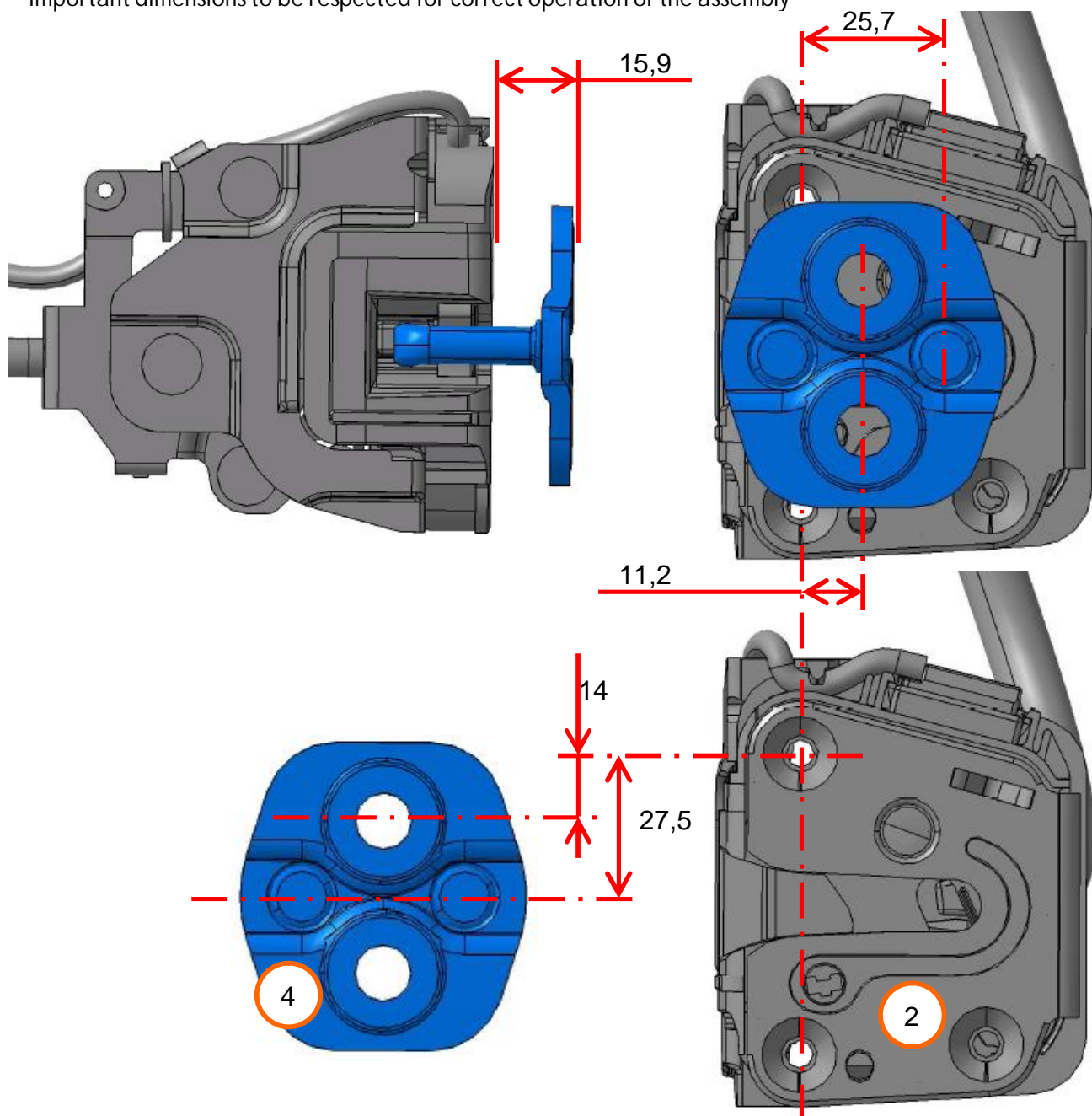


Example of latch installation on mass production rear hinged doors

- 1 Right rear hinged door
- 2 Door latch
- 3 Left rear hinged door
- 4 Striker



Important dimensions to be respected for correct operation of the assembly



It may be necessary to reconfigure the UCH in the Opel network to indicate the presence or not of a door to it (using the CLIP diagnostics tool).

For information, there are five parameters to signal to the UCH according to the final configuration of the vehicle:

- | | |
|---------------------|--------------------------------------|
| - Front left door: | Absent or present |
| - Front right door: | Absent or present |
| - Left side door: | sliding door, hinged door or no door |
| - Right side door: | sliding door, hinged door or no door |
| - Rear door: | Absent or present |

It is possible to double the engine start and stop control.

It is the job of the converter to take into account all the aspects associated with safe operation and to ensure:

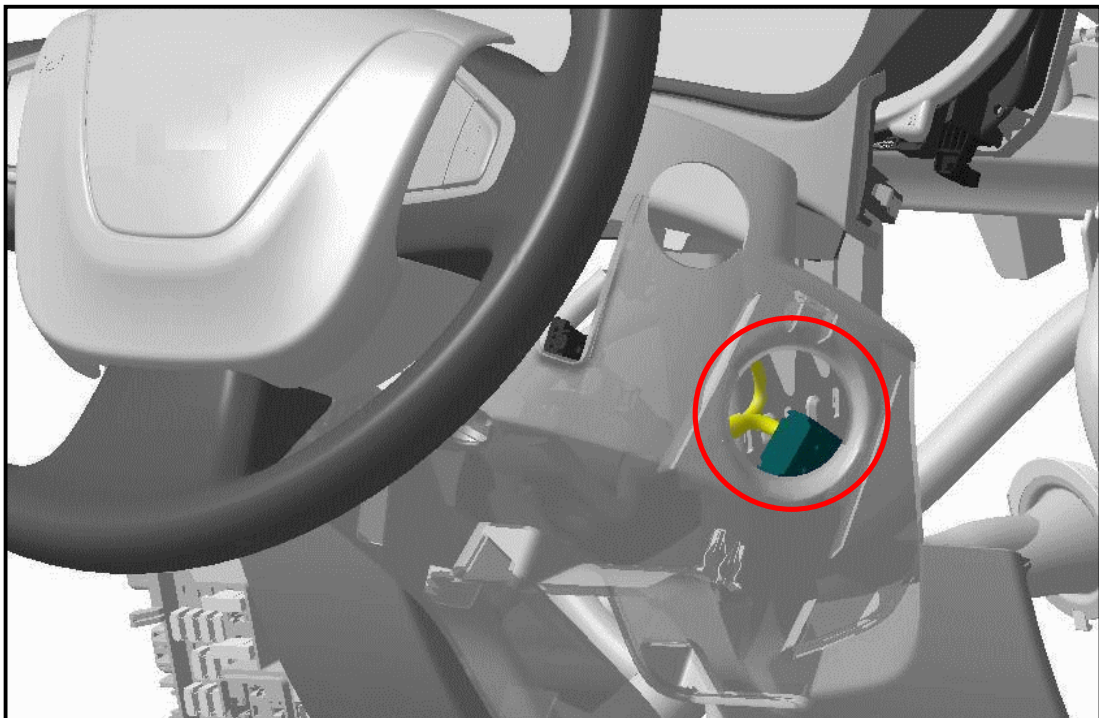
- the quality of the connections.
- that the wires added have the same cross sections as the original wires; or even larger if called for by the length of the wires added.
- that relays closed at rest are used if the cut-offs in these lines are executed via relays.

Please also see the “Wiring” and “Electrical Connections” sheets.

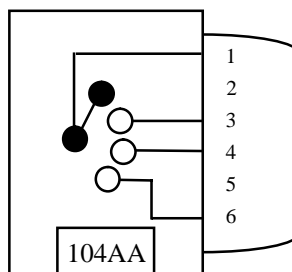
This installation operation must be done with the battery disconnected.

To effect the remote engine stop or start function, the function of the ignition switch on start-up needs to be recreated.

POSITION OF THE IGNITION SWITCH



ASSIGNMENT OF CONNECTOR WAYS



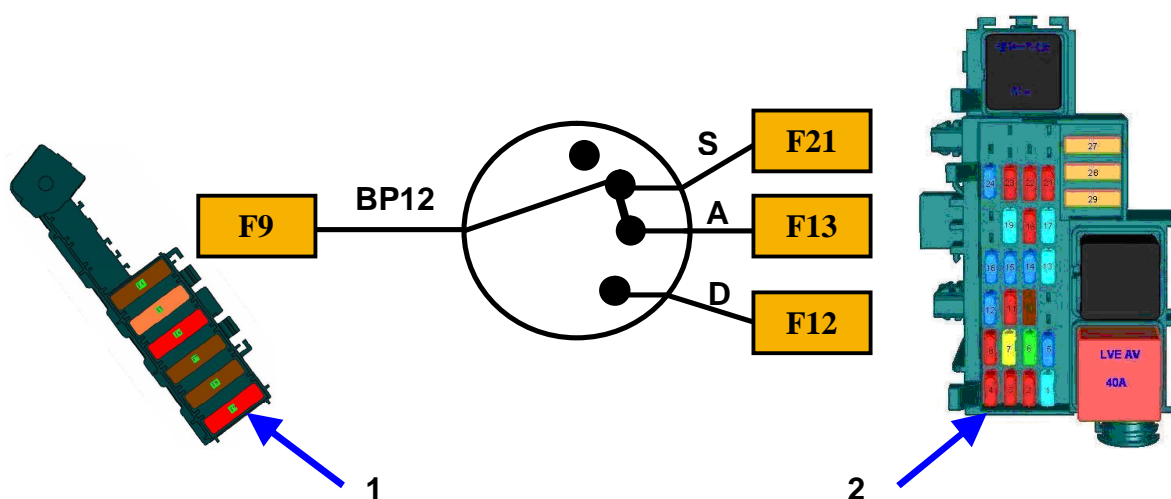
Way number	Assignment
Way 1 (BP12)	Protected 12 V power supply, red wire with cross section 5 mm ²
Way 2	-
Way 3 (D)	Start-up, beige wire with cross section 5 mm ²
Way 4 (A)	Primary ignition supply, yellow wire with cross section 5 mm ²
Way 5	-
Way 6 (S)	Current distribution power supply, yellow wire with cross section 5 mm ²

To start the engine (starter solenoid control), activate way 3 with the protected 12 V power supply.

Way 4 to be activated to start the engine and to be cut off to stop it.

Way 6 to be cut off momentarily during starter activation.

LOCATION OF CORRESPONDING FUSES



- 1: Engine interconnections unit (BIM) power supply board
- 2: Passenger compartment fuse-relay box (BFRH)


Depending on the customer's requirements, an airbag or seat belt pretensioner may need to be deactivated. This can be done using the Opel diagnostics tool in the Opel dealer network.

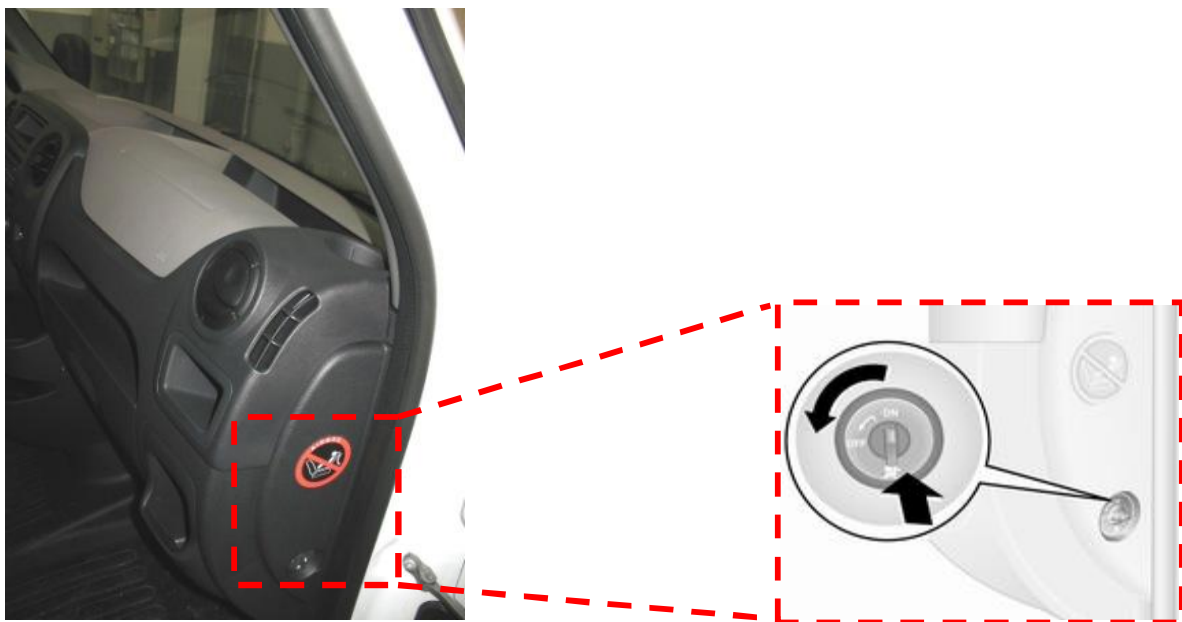
An airbag or pretensioner that has been deactivated can be reactivated at any time.

After modification, the vehicle must still comply with the legislation and standards in force in the country of sale.

The customer must be notified of any modifications.

Temporary deactivation of the passenger airbag

- Front airbag and side airbag systems for the front passenger seat have to be deactivated if a child restraint system is to be fitted on this seat. The belt pretensioners and all driver airbag systems will remain active. The front passenger airbag system can be deactivated via a switch on the side of the instrument panel.
- With the front passenger door open, press switch in and rotate anticlockwise to the OFF position.
- Front passenger seat airbags are deactivated and will not inflate in the event of a collision. Control indicator  illuminates continuously in the information display.



Switch to deactivate the passenger airbag

Note:

- Airbags and pretensioners cannot be added after vehicle manufacture.
- The front airbag system is triggered in the event of a front-end impact of a certain severity. The ignition needs to be switched on.
- For more information, also see Chapter 32, 141 and the General conversion recommendations

Before working on the vehicle, refer to chapter 107 “Electrical Connections”.

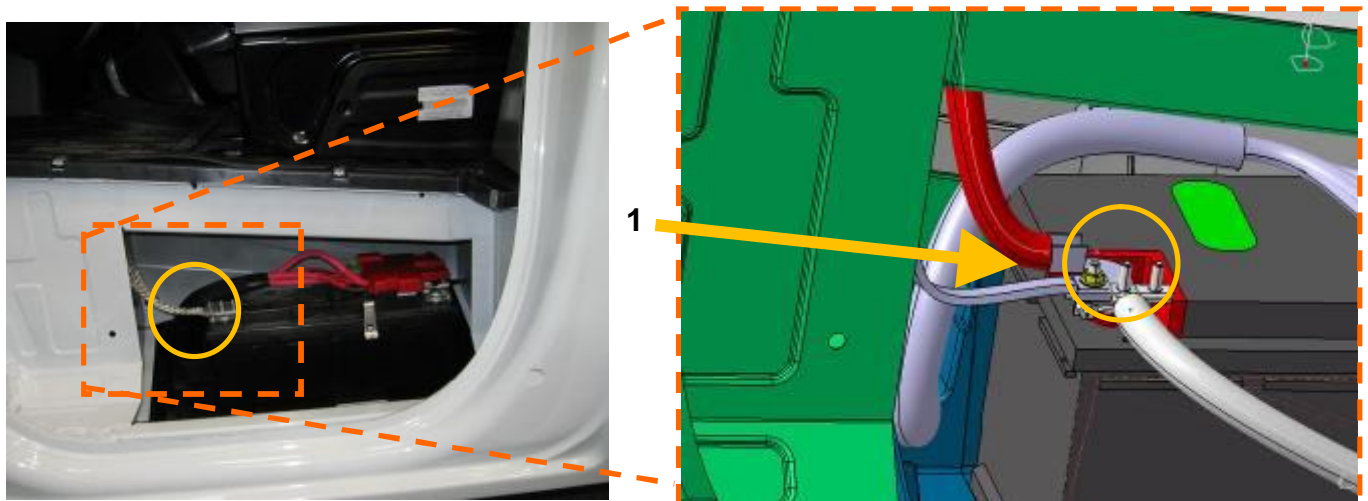
1. General recommendations

The wiring used must allow the negative battery terminal block to be removed (tightening torque 8 Nm \pm 15%).

Tighten at the recommended torque of 8 Nm \pm 15%.

Leave threading of at least one thread free after tightening.

NEGATIVE BATTERY TERMINAL



- 1: Additional wiring (must be black) connected to the negative battery terminal

2. Wiring protection

Use a category 3 resin, lightweight felt or tape-type protection in the engine compartment and in the under-body and category 1 to 3 for the other sections not subjected to high temperatures (see electrical chapter of the General Conversion Guide).

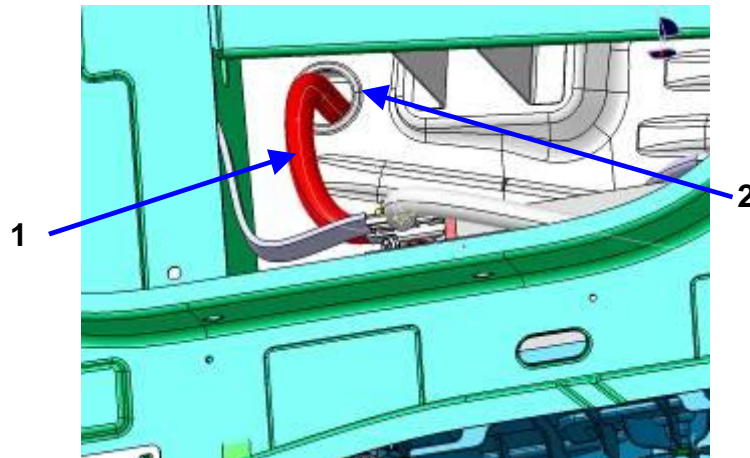
Since the annular sheathing type protection (Split Annular Sheath) is abrasive and may cause corrosion (paint wear) and noise (in hollow bodies), it must be immobilised.

There must be no contact between the wiring and the brake or fuel pipes.

If the original wiring is near to an annular sheath, a spacer (double finger clip grip) must be added in order to avoid any contact (risk of wear and short circuit).

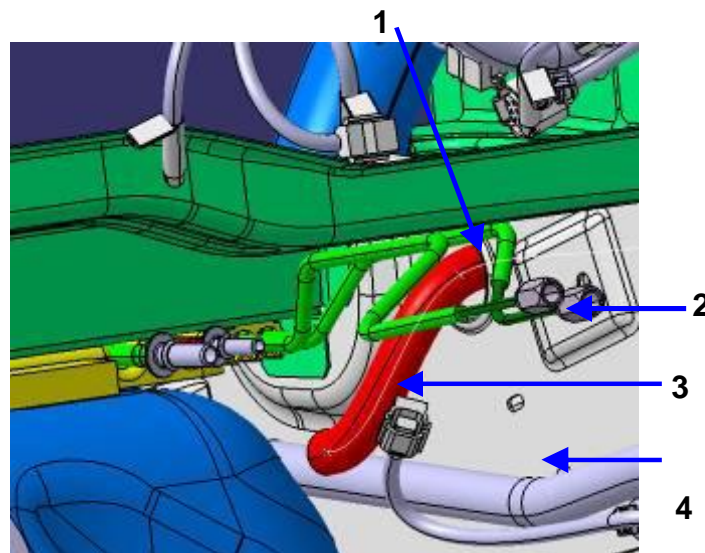
3. Wiring duct

WIRING PATH IN BATTERY TRAY



- 1: Additional wiring
- 2: Cable duct (diameter 40), grommet to be fitted

UNDER-BODY WIRING PATH



- 1: Cable duct (diameter 40), grommet to be fitted
- 2: Brake pipes
- 3: Additional wiring
- 4: Under-body electrical wiring

Before working on the vehicle, refer to chapter 107 “Electrical Connections”.

Depending on the electrical assessment, the power take-off may be conditioned with the engine running information.

1. General recommendations

The wiring used must allow the positive battery terminal block to be removed (tightening torque $8 \text{ Nm} \pm 15\%$).

The wiring must be red and supported inside the battery tray and as close to the terminal block as possible in order to avoid any vibration that could lead to damage of a terminal block or loosening of the nut. A red insulating sleeve is necessary for the terminal.

The wiring must be protected by a fuse which will be sized depending on the cross section of the wire and on the consumer.

There are two options for connecting to the positive battery terminal, depending on the power consumed. Any other connection to the positive terminal is prohibited.

POSITIVE BATTERY TERMINAL



- 1: Locations provided for midi-type fuses for power supply of less than 40 A
- 2: M6 stud for power supplies greater than 40 A

Note:

It is also possible to connect directly to the battery using the 2-way connector located in the B pillar, which is available with the “KPD” and “KC5” options. Please refer to the relevant sheets for more information.

OPEL MOVANO (X62) 140 – CONNECTION TO THE POSITIVE BATTERY TERMINAL



2. Connection to M6 stud

Make sure there is good contact (flatness) with the terminal. Crimping must be done in accordance with terminal manufacturer guidelines.

Tighten at the recommended torque of 8 Nm \pm 15% and leave at least one spare thread after tightening.

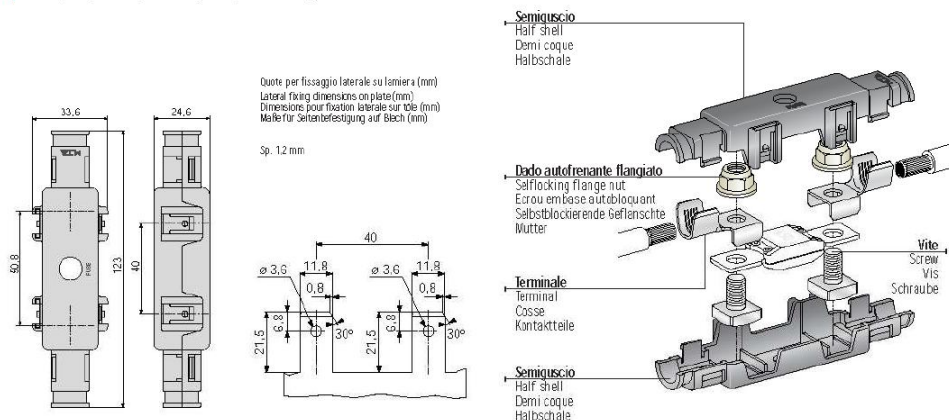
The fuse holder should be properly attached to avoid any vibrations and damage to its surroundings (e.g. risk of noise, corrosion).

EXAMPLE OF FUSE AND FUSE HOLDER

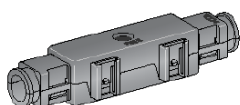


SCHEMA DI MONTAGGIO

Mounting example - Exemple de montage - Beispiel der Steckmöglichkeiten



KIT



Kit portafusibile + viti dadi e terminali
Kit fuseholder + screws, nuts and terminals
Kit portefusible + vis, écrou et cosse
Kit Sicherungshalter + Schrauben, Muttern
u. Kabelschuhe

PA 66
GF30
Nero
Black
Noir
Schwarz

01.00395



01.00300

1
MASTER
10

For information: MTA fuse kit, part number 01.00395



VAUXHALL



Wir leben Autos.

3. Connection using the midi fuse locations

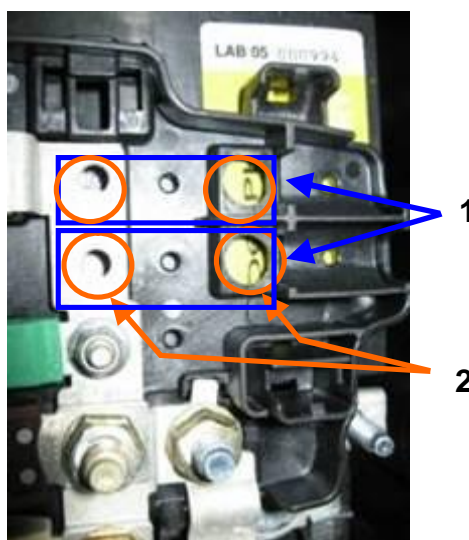
Two locations are provided for midi-type fuses. For this, special M5 studs from the supplier MTA must be used.

The following fuses may be used:

- 30 A midi fuse;
- 40 A midi fuse.

Tighten at the recommended torque of $5 \text{ Nm} \pm 15\%$ for the M5 studs and leave at least one spare thread after tightening.

POSITIVE BATTERY TERMINAL



- 1: Locations provided for midi-type fuses
- 2: Locations provided for M5 studs

EXAMPLE OF:

M5 STUD



MIDI FUSE



N.B.:

Tightening torque for M8 nuts on the positive terminal: $12 \text{ Nm} \pm 15\%$

4. Wiring protection

Use a category 3 resin, lightweight felt or tape-type protection in the engine compartment and in the under-body and category 1 to 3 for the other sections not subjected to high temperatures (see "Wiring" sheet).

Since the split annular sheathing type protection is abrasive and may cause corrosion (paint wear) and noise (in hollow bodies) it must be immobilised.

There must be no contact between the wiring and the brake or fuel pipes.

If the original wiring is near to a split annular sheath, a spacer (double finger clip grip) must be added in order to avoid any contact (risk of wear and short circuit).



No intervention or modification must be made to elements relating to the vehicle's passive safety.

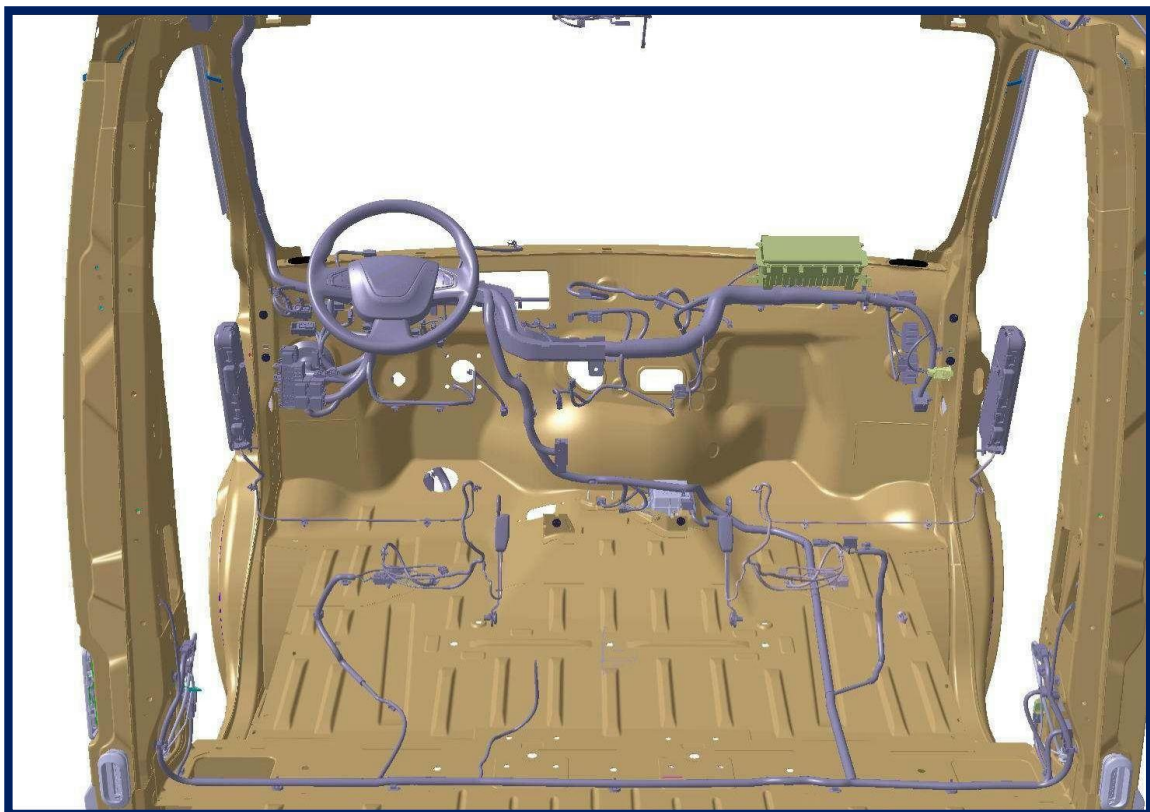
The airbag and seatbelt pre-tensioner wire is an integral part of the vehicle's passive safety system units.

Particular attention must therefore be paid before any transformation which may affect their integrity and generate a customer effect which potentially affects safety (example: unwanted and/or untimely triggering of the airbags, lack of triggering or delayed triggering in the event of an impact (airbags and pre-tensioners), untimely triggering of the pyrotechnic restraint systems with the vehicle moving or at a stop).

The routing for this wiring must be identified on the vehicle. If necessary, before any intervention, install protection on these sensitive units to preserve their integrity under all circumstances.

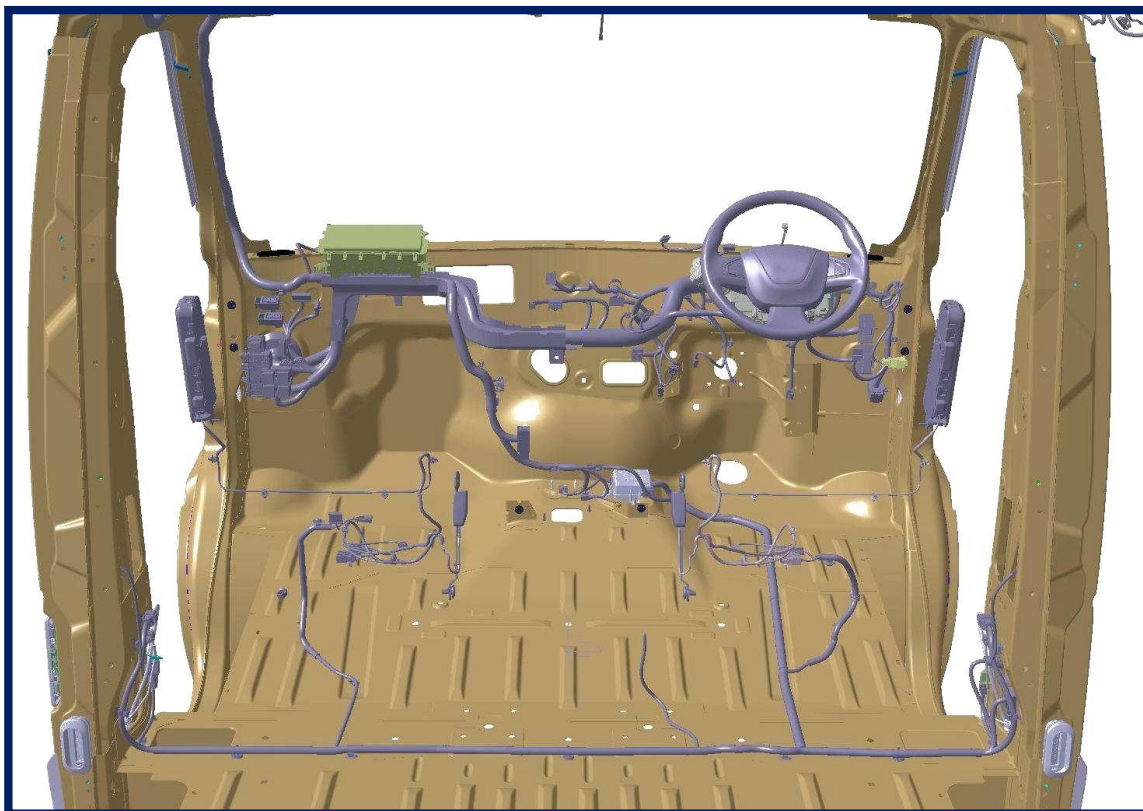
Location of the wiring in question:

In blue, the wiring for the sensitive units which make up the vehicle's passive safety system:



Left-hand drive version

In blue, the wiring and sensitive units which make up the vehicle's passive safety system:



Right-hand drive version

Note:

- For more information, also see Chapter 32, 137 and the General conversion recommendations

Before working on the vehicle, refer to the “Electrical Connections” sheet.

The TRABUS option is used to provide

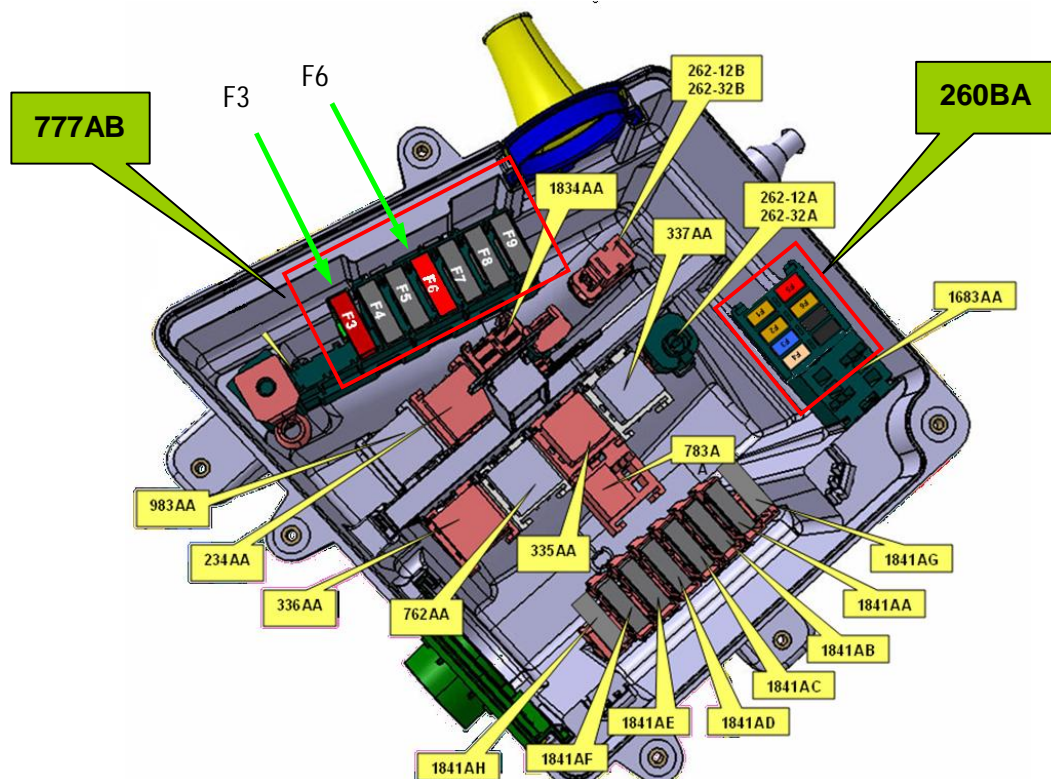
- Two specific power fuses in the engine compartment connections unit (BIM)
- A specific fuse box in the engine compartment connections unit (BIM)
- An optional fuse/relay box (BFRO) in the right-side dashboard area
- Two standby connectors in the dashboard area (centre, below the radio)
- A standby connector in the right-side dashboard area
- Two standby connectors in the right-side B pillar (lateral area).

1. Engine compartment area connectors

Two fuses dedicated to the TRABUS option (F3 and F6) are located in the power fuse strip (777AB).

Fuse Box 260BA is specific to the 16-seater BUS version.

These fuse boxes are in the engine compartment connections unit (BIM) located in the engine compartment.



POWER SUPPLY PLATE (777AB)

Fuse	Amperage [A]	Connection	Function
F1			
F2			
F3	50	BP59	BUS X62
F4	40	BP8	ABS UCE
F5	50	BP9	Additional heating relay 1
F6	50	BP23	Purpose-built body conversion / X62 BUS
F7	70	BP91	Additional heating relay
F8	70	BP11	Rear lights, passenger compartment relay/fuse box, Diesel heater resistor
F9	70	BP12	Passenger compartment relay/fuse box

16-Seater BUS FUSE PLATE (260BA)

Fuse	Amperage [A]	Connection	Function
F1	5	99K	Lighting control relay power supply (GRUAU) Front and rear lighting
F2	5	99S	Lighting control relay power supply (GRUAU) Individual lighting (X81)
F3	15	BPS2	Relay 1155 power supply (70A + load shed accessory relay)
F4	25	BPS3	Relay 1155 power supply (70A + BCM battery relay)
F5	10	AP1W	Power supply for multimedia display from GRUAU kits
F6	5	BT1	Door sill electronic control unit power supply
F7			
F8			

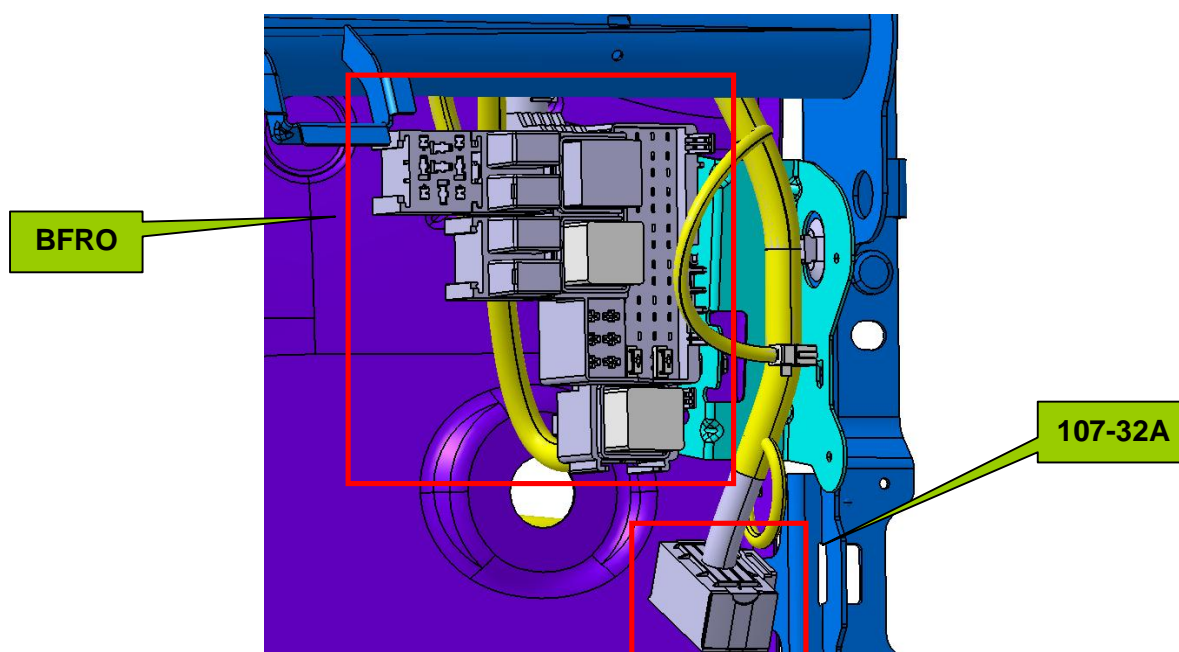
2. Right-side dashboard area connectors:

The optional relay/fuse box (BFRO) is located on the right-hand side (left- and right-hand drive)

It is attached to the right-hand flange of the dashboard beam.

Unit 107-32A is used to connect the dashboard wiring to child transport interconnection wiring.

This connector is on standby and coiled in the right-side dashboard wiring.



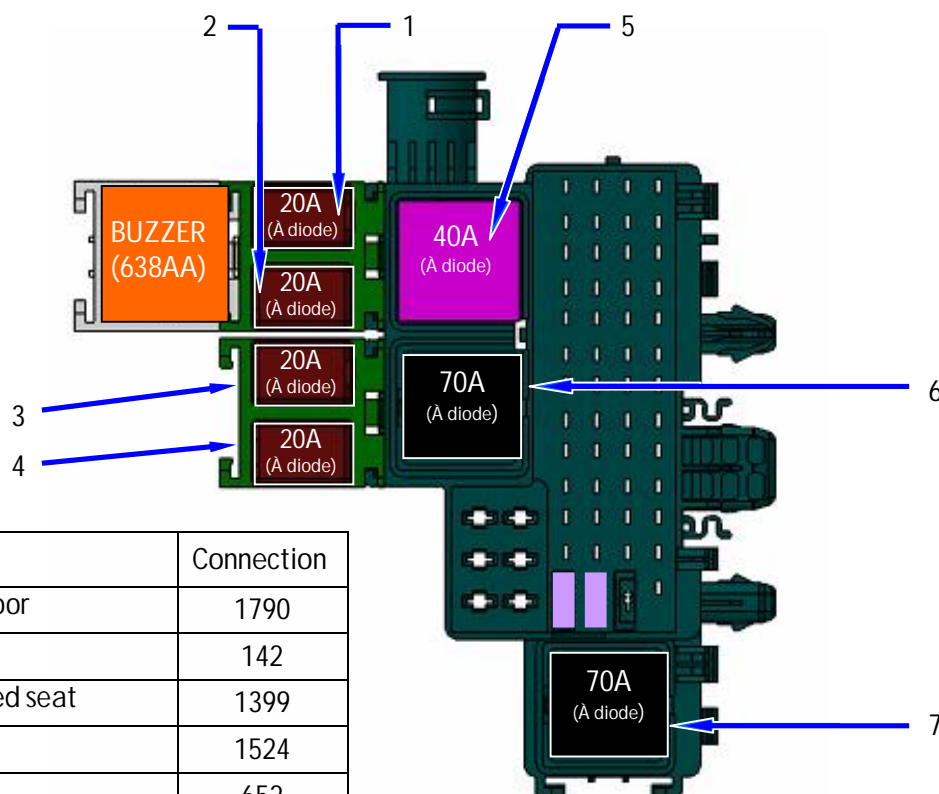
CONNECTOR 107-32A - FOR CHILD TRANSPORT INTERCONNECTION			
Pin	Connection	Ø Cable [mm²]	Function
1	13BP	0,5	Fuse/Interior Lights/Control + timed lighting feed
2	13BQ	0,5	Fuse/Interior Lights/Control - timed lighting feed
3	MAN	0,5	Right-side dashboard cross member electrical earth
4			

The counterpart to this connector and the following contacts must be obtained:

Connector reference	Ø Cable [mm²]	Contact supplier reference	Supplier
0-1379674-1	0,35 bis 0,5	0-1674742-1	TYCO

Note: The maximum permanent current of these contacts must not exceed 3A

BFRO = Optional Relay/Fuse Box (1016)



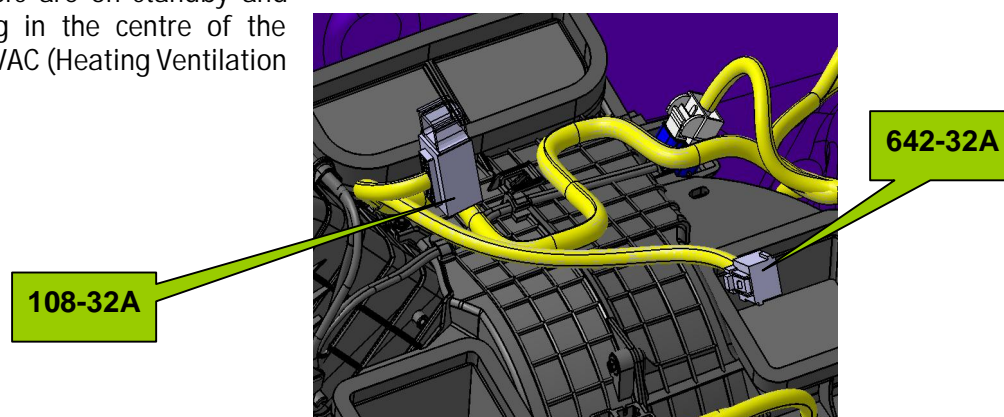
Part	Function	Connection
1	Sliding door	1790
2	Boot lid	142
3	Bus heated seat	1399
4	Bus ESP	1524
5	A/C info	652
6	BCM + battery feed	1760
7	+ load shed accessory feed	1155

3. Right-side dashboard area connectors

Unit 108-32A is used to connect the dashboard wiring to Instrumentation interconnection wiring.

Unit 642-32A is used to connect the dashboard wiring to heating interconnection wiring.

These two connectors are on standby and coiled in the wiring in the centre of the dashboard above HVAC (Heating Ventilation Air Cooling)



CONNECTOR 108-32A - ALLOCATION OF CHANNELS			
Pin	Connection	Ø Cable [mm²]	Function
1	38AH	2	+ Electric Fan Motor Control feed Speed 1
2	38MT	0.5	Relay 1 Control Motor Running
3	38AJ	1	+ Electric Fan Motor Control feed Speed 2
4	38AK	1	+ Electric Fan Motor Control feed Speed 3
5	BT2	0.5	+ timed battery feed 2
6	LPDB	0.5	+ Side Light feed Right-side Coupling via Coupling Module
7	MAN	0.5	Right-side dashboard cross member electrical earth
8	99K	1	Front and Rear Central + Interior Lighting Feed
9	AP1D	2	Electric power unit protected + after ignition feed
10	99KA	1	Front and Rear Central - Interior Lighting Feed
11	99SA	1	- Individual lighting feed
12	133P	0.5	Door Sill Deployment Light Control
13	62A	0.5	Left-side door striker plate control
14	62B	0.5	Right-side door striker plate control
15	62C	0.5	Left-side door striker plate signal
16	99S	1	+ Individual lighting feed

The counterpart to this connector and the following contacts must be obtained:

Black 16-way spline holder connector, supplier TYCO-0-0185763-1			
Pin	Ø Cable [mm²]	Supplier reference	Supplier
Except Pin 1-8-9-16	0.35 to 0.75 mm²	211CL2S1160	FCI
	1 to 2 mm²	211CL2S2160	FCI
Pin 1-8-9-16	0.35 to 0.75 mm²	211CL3S1160	FCI
	1 to 2.5 mm²	211CL3S2160	FCI
	2.5 to 5 mm²	211CL3S3120	FCI

CONNECTOR 642-32A - ALLOCATION OF CHANNELS OF			
Pin	Connection	Ø Cable [mm ²]	Function
1	LPD	0.5	+ Side Light feed Right-side Coupling via Coupling Module
2	103P	0.5	Right-side headlight actuator control 2
3			
4	MAN	0.5	Right-side dashboard cross member electrical earth
5			
6	103R	0.5	Right-side headlight actuator control 4
7			
8	103N	0.5	Right-side headlight actuator control 1
9	103Q	0.5	Right-side headlight actuator control 3
10	SP8	0.5	Heated seats protected + current distribution
11	BP80	0.5	Protected + battery feed / Passenger compartment fuse 2 / Fuse box
12	MAN	0.5	Dashboard cross member electrical earth

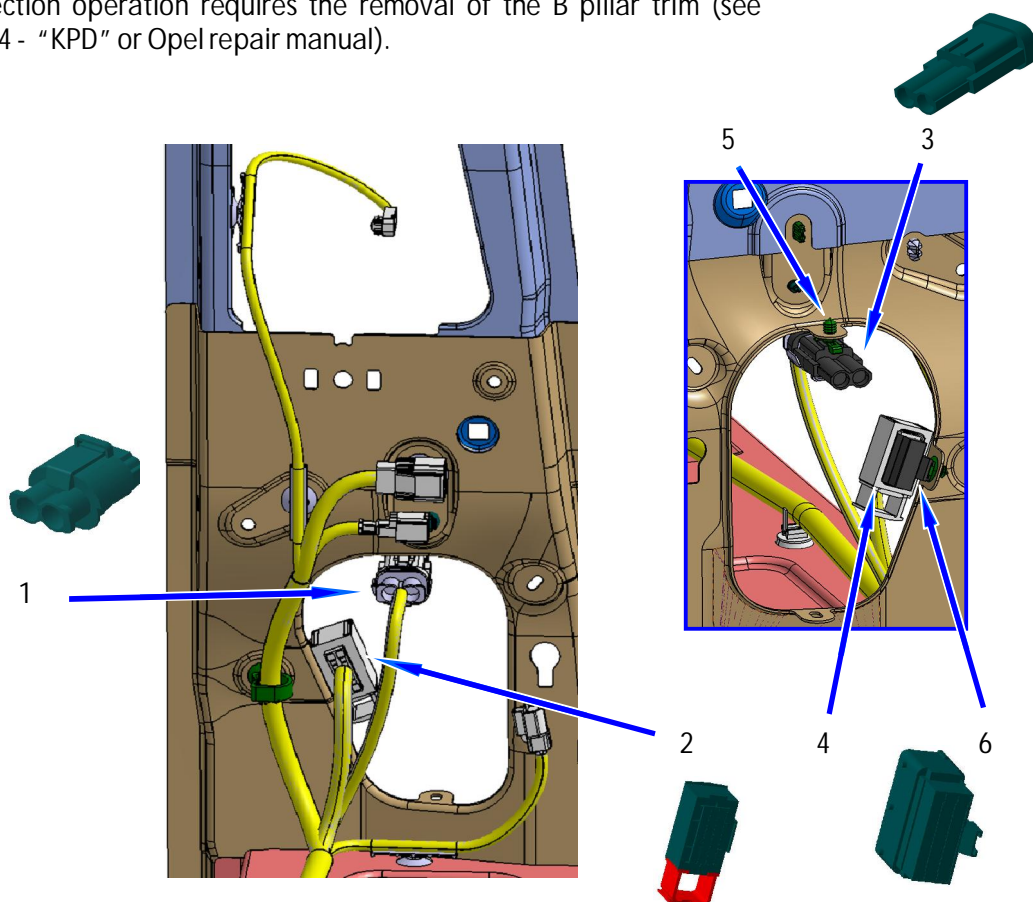
The counterpart to this connector and the following contacts must be obtained:

Green 12-way spline holder connector, supplier TYCO 1-967627-1			
Pin	Ø Cable [mm ²]	Supplier reference	Supplier
PIN 1 to 12	0.35 to 0.75	211CL2S1160	FCI
	1 to 2	211CL2S2160	FCI

4. B-pillar connectors

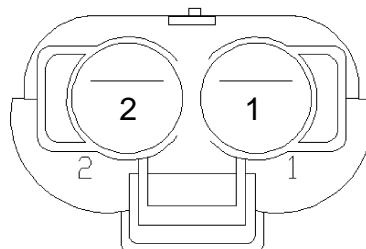
The connectors are located in the right-hand B pillar behind the plastic trim.

This connection operation requires the removal of the B pillar trim (see chapter 104 - "KPD" or Opel repair manual).



Part	Function	Connection	No. of Pins
1	Power connector	384-32B	2
2	Bus pre-fit connector	BH-32A	36
3	Power connector	384-32B	2
4	Bus pre-fit connector	BH-32A	36
5	Wiring-mounted		
6	Wiring-mounted		

ALLOCATION OF CHANNELS OF CONNECTOR 384-32B



Pin	Connection	Ø Cable [mm²]	Function
1	BP23	7	12V protected + battery feed Passenger compartment 4
2	BP59	7	12V protected + battery feed Electric door fuse

Note:

The maximum permanent current of these power supplies must not exceed 40A. These lines are protected by 50A F6 (BP23) and F3 (BP59) fuses in the engine compartment interconnections unit (777).

Important:

This power supply is connected directly to the battery. The vehicle is therefore not protected by the energy management system. Risk of battery draining.

The counterpart to this connector is already fitted to the wiring but it is still necessary to obtain its contacts.

Pin	Ø Cable [mm²]	Supplier reference	Supplier
1 and 2	3 to 6	P790861	TYCO
	7 to 10	P790862	TYCO

CONNECTOR BH-32A - ASSIGNMENT OF CHANNELS			
Pin	Connection	Ø Cable [mm²]	Function
A1	BT1	2.5	+ timed battery feed 1
A2	103P	0.5	Right-side headlight actuator control 2
A3	103Q	0.5	Right-side headlight actuator control 3
A4	LPDB	0.5	+ Side light feed Right-side coupling via coupling Module
A5	38MT	0.5	Relay 1 control motor running
A6	5GK	0.5	Selector contact signal 1
A7	62A	0.5	Left-side door striker plate control
A8	151R	0.5	+ buzzer feed
A9	BT2	1	+ timed battery feed 2
A10	35N	0.5	Front speaker signal
A11	BPT2	0.5	Lighting timed protected + battery feed
A12	38AJ	1	+ Electric Fan Motor control feed Speed 2
B1	38AH	2	+ Electric Fan Motor control feed Speed 1
B2	103R	0.5	Right-side headlight actuator control 4
B3	13BP	0.5	Fuse/Interior Lights/Control + timed lighting feed
B4	47F	0.5	Vehicle speed signal
B5	SP8	0.5	Protected + current distribution feed / Heated seats
B6	62B	0.5	Right-side door striker plate control
B7	62C	0.5	Left-side door striker plate signal
B8	151S	0.5	Buzzer control
B9	34A	1	Left-side rear speaker + feed signal
B10	34C	1	Right-side rear speaker + feed signal
B11			
B12	38AK	1	+ Electric Fan Motor control feed Speed 3
C1	AP1W	1	Protected + after ignition feed/Semi-active anti-roll ECU
C2	103N	0.5	Right-side headlight actuator control 1
C3	13BQ	0.5	Fuse/Interior Lights/Control - timed lighting feed
C4	27A	0.5	- handbrake light control feed
C5	BP80	0.5	Protected + battery feed / Passenger compartment fuse 2 / Fuse box
C6	5GL	0.5	Selector contact signal 2

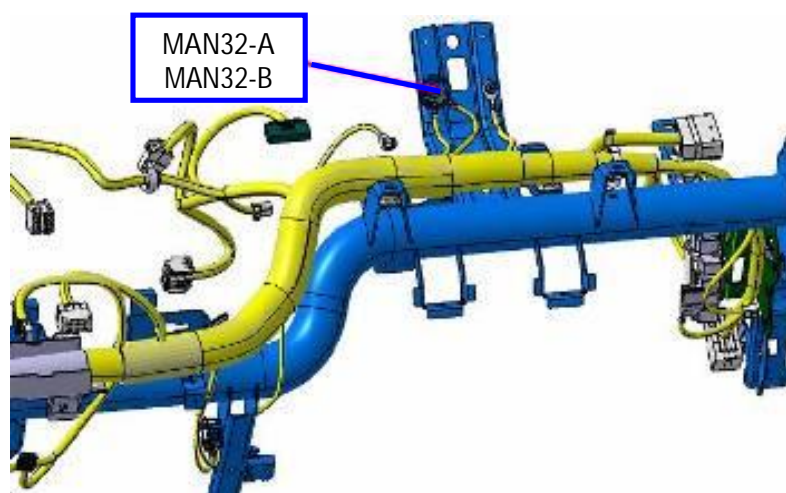
CONNECTOR BH-32A - ASSIGNMENT OF CHANNELS			
Pin	Connection	Ø Cable [mm²]	Function
C7	133P	0.5	Door sill deployment light control
C8	13M	0.5	- Interior lights relayed flange delay switch feed
C9	34B	1	- left-side rear speaker feed signal
C10	34D	1	+ right-side rear speaker feed signal
C11	99KA	1	Front and Rear Central - Interior Lighting Feed
C12	99SA	1	- Individual lighting feed

The counterpart to this connector is already fitted to the wiring but it is still necessary to obtain its contacts.

Pin	Ø Cable [mm²]	Supplier reference	Supplier
Except Pin 1A – 12A – B1 – B12 – C1 – C12	0.35 to 0.75 mm²	211CL2S1160	FCI
	1 to 2 mm²	211CL2S2160	FCI
Pin 1A – 12A – B1 – B12 – C1 – C12	0.35 to 0.75 mm²	211CL3S1160	FCI
	1 to 2.5 mm²	211CL3S2160	FCI
	2.5 to 5 mm²	211CL3S3120	FCI

Location of earths associated with the 'TRABUS' option

The earths (MAN32-A and MAN32-B) for the 6-way and 2-way connectors are grouped together on a single stud on the right-hand support of the dashboard cross member.



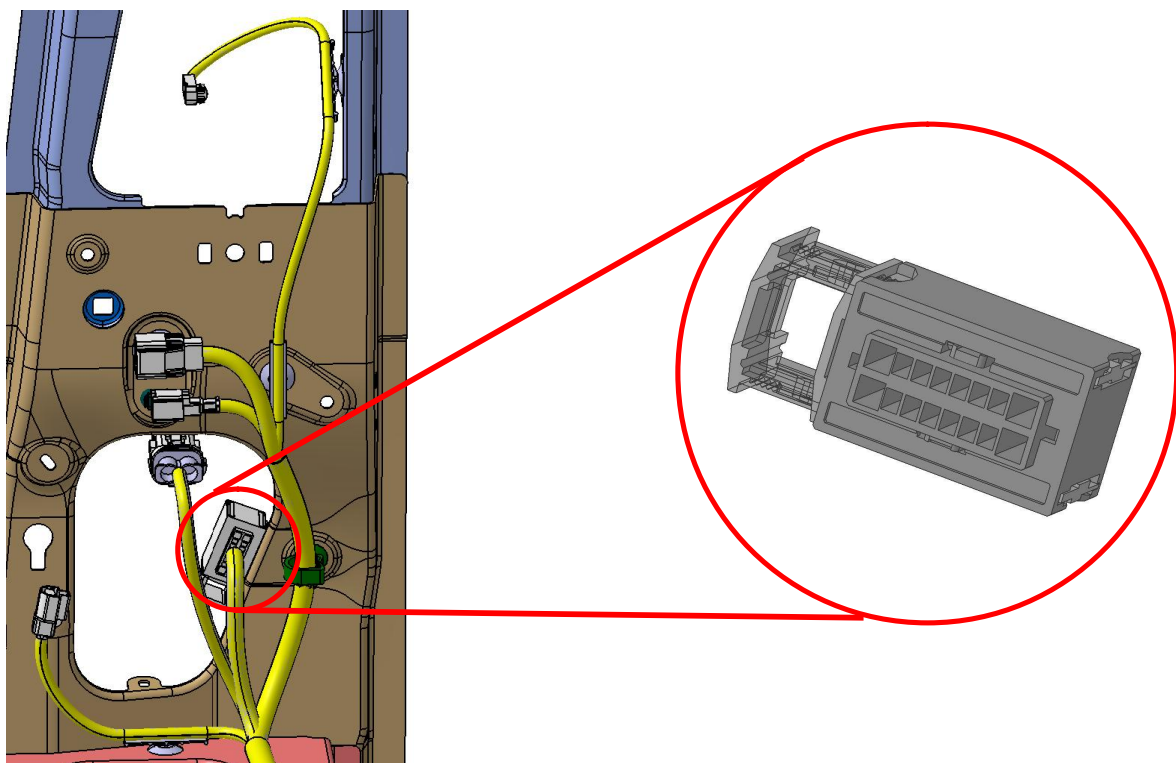
On conversions with an additional opening element in the rear area, it is possible to incorporate an additional electric lock, activated by the Master's original central locking.

To do so, the Master must be equipped with the 'SOP03' option (3-button door opening system). It may be necessary to modify the configuration of the remote control. For more information, see chapter 129 - MODIFIABLE ECU SETTINGS

It is recommended to use a genuine Opel additional electric lock.

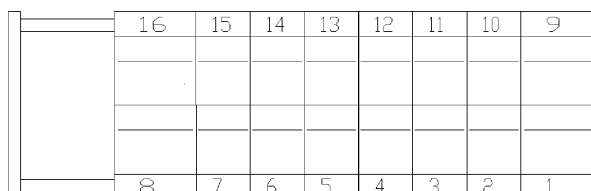
The electrical information in the 16-way connector (located in the B pillar) is used to supply the additional lock.

Location of connector in the B pillar



For a non-Opel electric lock, the electrical actuator properties set out in the table below must be complied with.

16-way connector



Pin	Function	
1	Analogue door closing control signal	2
2	Logical boot lock switch information signal	0.35
3	Delayed +12 V 2 A power supply for interior lights, controlled by the passenger compartment ECU (UCH)	0.5
4	Left lateral side light 3A power supply	0.5
5	+ right-side rear speaker feed	1
6	+ left-side rear speaker feed	1
7	'Engine running' information, 10A fuse shared by channels 7 and 8	1.5
8	+ 12 V load shed current distribution power supply, 10A fuse shared by channels 7 and 8	1.5
9	Analogue door opening control signal	2
10	Third stop light 5A power supply	0.5
11	Progressive earth for 2A interior lights, controlled by the passenger compartment ECU (UCH)	0.35
12	Right lateral side light 3A power supply	0.5
13	- right-side rear speaker feed	1
14	+ left-side rear speaker feed	1
15	Reserve	
16	Analogue door deadlocking signal	2

Channels 1, 9 and 16: the signals can only be used to control standard locks and only have sufficient capacity for three locks.

For more than three locks, a relay must be used.

OPEL MOVANO (X62)
150 – ADDITIONAL LOCK WITH 3-BUTTON KEY



Note:

The width of the contacts for channels 1, 8, 9 and 16 is 2.8mm; the width for the other pins is 1.5mm.

Function	Pin	Nominal I (A) per engine	Peak I (A) per engine	I / output (A)	U (V) / T (°C) Ref.
Rear door unlocking	1	2.7 (x3)	3.5	8.1	11.5 / 23°
Rear door locking	9	2.7 (x3)	3.5	8.1	11.5 / 23°
Locking	16	1.4 (x3)		4.2	11.5 / 23°

The 'STOP & START' (= S&S) option controls the automatic stopping of the engine when the vehicle stops and automatic restarting when a deliberate restart is detected, in order to optimise fuel consumption and pollution.

The 'STOP & START' option is available on 2.3 dci engines (M9T front- and rear-wheel drive, 100hp and 125hp).

The 'STOP & START' option is incompatible with the following options: M1F (chapter 63.3), KPD (chapter 104), KC6 (chapter 105), WRF (chapter 106), UF3 (chapter 111), additional heating, additional air conditioning.

N.B:

The 'STOP & START' option can be deactivated temporarily via a switch (the function is automatically reactivated each time the engine is switched on)

When an automatic stop occurs, the following pictogram appears on the instrument  panel:

1. Operating conditions

- 1.1. To cause the engine to stop automatically
 - Clutch pedal released
 - AND vehicle in neutral
 - AND speed threshold (~ 4 km/h) OR distance threshold (~25 m) exceeded since the last automatic stop
 - AND no parking manoeuvres (reverse gear not engaged)
 - AND vehicle speed slower than or equal to 3 km/h
 - AND bonnet closed
- 1.2. For restarting in automatic mode
 - Clutch pedal action AND neutral
 - OR Clutch fully pressed
 - OR S&S switch pressed
- 1.3. For restarting in downgraded or safety mode
 - Outside temperature (below approx. 0°C or above approx. 30°C)
 - Battery not sufficiently charged
 - Vehicle speed > 7 km/h (on a slope)
 - Repeated presses of the brake pedal or need for the braking system

Note: *For more details, refer to the Vehicle User Manual*

2. Convertibility conditions recommendations and restrictions

2.1. Recommendations and restrictions

The 'STOP & START' option is not compatible with some conversions which require constant power (electrical or mechanical) from the vehicle.

2.2. Vehicle servicing

Before carrying out any servicing on the vehicle, the battery must be disconnected (to avoid the S&S causing the engine to start unexpectedly).

2.3. Sensors

It is prohibited to modify the information issued by the sensors connected to the S&S system (particularly for opening elements).

It is permitted to take the information from the bonnet sensor for alarms.

2.4. Parts controlling engine Stop / Start

- Doors and windows
- Bonnet sensor
- Battery voltage level (power management)
- Outside temperature sensor
- Braking amplifier depression sensor
- S&S activation button
- Clutch pedal start of travel sensor

2.5. Associated risks

- Loss of power steering (hydraulics) during the automatic engine stop.
- Loss of function following excessively frequent stoppages. If the battery is not sufficiently charged, 'STOP & START' cancels itself out.
- Engine restart with no action to ensure the safety and comfort of the vehicle's users.